Vol. 902 Number 4

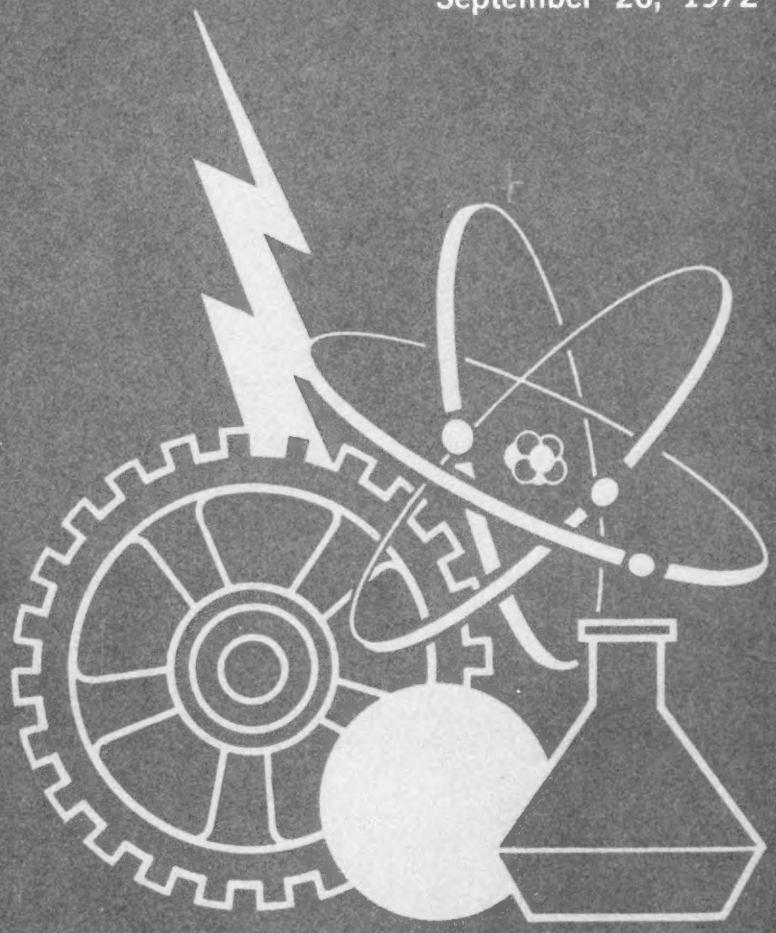
OFFICIAL GAZETTE

of the
UNITED STATES PATENT OFFICE

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

September 26, 1972



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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

September 26, 1972 Volume 902 Number 4

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PATENT OFFICE NOTICES

Office Actions—Timely Response

The Patent Office has been receiving an excessively large volume of petitions to revive based primarily on the late filing of amendments and other responses to official actions. Many of these petitions indicate that the late filing was due to unusual mail delays; however, the records generally show that the filing was only two or three days late.

In order to alleviate, for applicants and the Office, the problems and expenditures of time and effort occasioned by abandonments and petitions to revive, it is suggested that responses to official action be mailed to the Patent Office at least one, and preferably two, week(s) prior to the expiration of the period within which a response is required. This suggestion is made in the interest of improving efficiency, thereby providing better service to the public.

WILLIAM FELDMAN,
Aug. 25, 1972. *Deputy Assistant Commissioner for Patent Examining.*

Declaration and Power of Attorney Form PO–1147 (Revised) (3–72)

A revised Declaration and Power of Attorney Form, PO–1147 (Revised) (3–72), was recently issued and is supplied for use as a master copy for reproduction purposes. Experience with the revised form indicates that some confusion has been caused by the reference to "effective" filing date in item 600 of the form. The form is, therefore, being reprinted to delete the word "effective" from the descriptive language appearing in item 600. Persons who have copies of the old form may use the form by deleting the word "effective" before the form is reproduced. In this connection it is noted that the word "effective" appears three times in item 600, once on page 1 and twice on page 2.

RICHARD A. WAHL,
Aug. 28, 1972. *Assistant Commissioner for Patent Examining.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,588,744, I. C. McKechnie, AUTOMATIC ELECTRIC SPACE-DISCHARGE MATERIAL REMOVAL METHOD AND APPARATUS; **2,628,330,** E. M. Williams, CONDENSER-CHARGING SYSTEM FOR SPARK-CUTTING DEVICES; **2,650,979,** E. E. Teubner, METHOD AND APPARATUS FOR ELECTRICALLY DISINTEGRATING METALLIC MATERIAL; **2,654,256,** I. C. McKechnie, DIAPHRAGM SPRING RECIPROCATING TOOL; **2,756,316,** E. E. Teubner, APPARATUS FOR ELECTRICALLY ERODING MATERIALS; **2,769,078,** V. E. Matulaitis, ARCH MACHINING; **2,773,168,** E. M. Williams, HIGH-SPEED SPARK MACHINING APPARATUS; **2,783,411,** V. E. Matulaitis, SERVO FEED FOR MULTIPLE ELECTRODES; **2,804,575,** same, ARC MACHINING APPARATUS WITH PERIODIC POWER CONTROL; **Re. 25,542,** R. S. Webb, POWER FEED SYSTEM; **2,841,686,** E. M. Williams, AUTOMATIC CONTROL SYSTEM FOR THE ELECTRODE OF A SPARK-CUTTING APPARATUS; **3,243,567,** W. Lobur, ELECTRICAL DISCHARGE MACHINING APPARATUS; **3,257,580,** R. S. Webb, FAULT DETECTION AND CUT-OFF CIRCUIT FOR ELECTRICAL DISCHARGE MACHINING APPARATUS, **filed** Dec. 15, 1969, D.C., N.D. Ill. (Chicago), Doc. 69c2590, *Elox, Inc.* v. *Astral Precision Equipment Co.* Consent judgment, defendant has infringed and is liable to plaintiff under the patents in suit, May 2, 1972.

2,628,330. (See 2,588,744.)

2,650,979. (See 2,588,744.)

2,654,256. (See 2,588,744.)

2,756,316. (See 2,588,744.)

2,769,078. (See 2,588,744.)

2,773,168. (See 2,588,744.)

2,783,411. (See 2,588,744.)

2,804,575. (See 2,588,744.)

2,820,188. (See 3,031,158.)

2,841,686. (See 2,588,744.)

2,909,134, J. A. Kniefel, MACHINE FOR LAYING FLEXIBLE PIPE WITH ATTACHED RISERS, **filed** May 9, 1972, D.C., E.D. Calif. (Sacramento), Doc. S–2451, *Joseph A. Kniefel* v. *Mitchel Zylstra.*

2,919,027, C. M. Blumenfeld, SWIMMING POOL CLEANING APPARATUS, **filed** Jan. 3, 1972, D.C., N.D. Calif. (San Francisco), Doc. C–72–3, *Arneson Products, Inc.* v. *Charles M. Blumenfeld.*

2,993,664. (See 3,031,158.)

3,005,140. (See 3,031,158.)

3,013,568, Getchell and Peglow, DISHWASHER WITH DISPENSER FOR WATER CONDITIONING LIQUID, **filed** Mar. 21, 1972, D.C., N.D. Ohio (Cleveland), Doc. C–72–274, *The Tappan Company* v. *Norris Industries and Waste King Corp.*

3,031,158, W. H. Gille, AIRCRAFT CONTROL APPARATUS, **Re. 25,811,** R. J. Kutzler, CONTROL APPARATUS FOR AIRCRAFT; **2,820,188,** same, ALTITUDE CONTROL FOR AIRCRAFT; **3,081,966,** H. T. Avery, ROTATING WING AIRCRAFT; **2,993,664,** Alderson, Carpenter, deceased, by Fisher, executor, AUTOMATIC INSTRUMENT LANDING SYSTEMS FOR AIRBORNE CRAFT; **3,005,140,** W. H. KLIEVER, RADIO CONTROLLED AUTOMATIC PILOTS; **3,072,369,** R. C. Alderson, ADJUSTABLE APPARATUS FOR ATTITUDE STABILIZATION OF AIRCRAFT, **filed** July 23, 1969, D.C., N.D. Ill. (Chicago), Doc. 69c1534, *Honeywell, Inc.* v. *Sperry Rand Corporation, United Airlines, Inc. and Continental Air Lines.* On stipulation, ordered, second amended complaint shall be and is hereby dismissed with prejudice, and that defendants' counterclaim shall be and is hereby dismissed with prejudice, Mar. 29, 1972.

3,056,437, F. W. Mittins, SABER SAW, **filed** May 16, 1972, D.C. Mass. (Boston), Doc. C.A. 72–1605–C, *Westlund Industries, Inc.* v. *Rockwell Mfg. Co.*

3,072,369. (See 3,031,158.)

3,081,966. (See 3,031,158.)

3,083,965, H. A. Jewett, DIVING BOARD ASSEMBLY, **filed** May 24, 1972, D.C., S.D. Tex. (Houston), Doc. CA 72–H–691, *Harold A. Jewett* v. *Aquaslide 'n' Dive Corp. and Darbco, Inc.*

3,096,681, J. L. Burnside, KALEIDOSCOPIC VIEWER, **filed** Dec. 12, 1967, D.C., S.D.N.Y., Doc. 67–C–4861, *John L. Burnside III and Edwith S. Burnside* v. *Miya Company, Inc.* Order dismissing action for lack of prosecution, May 5, 1970.

3,129,927, A. D. Mast, MIXING APPARATUS FOR FLUENT MATERIAL, **filed** May 15, 1972, D.C., E.D. Pa. (Philadelphia), Doc. C.A. 72–938, *Feedmobile, Inc.* v. *A.W. Stauffer & Sons, Inc.*

3,152,376, Boser and De Vito, SNAP FASTENER, **filed** May 17, 1972, D.C.N.J. (Newark), Doc. C–863–72, *Plasti-Hook, Inc.* v. *Scovill Manufacturing Co.*

3,169,247, Davis and Fernald, OPHTHALMIC ASPHERIC LENS SERIES, **filed** May 12, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–1061–DWW, *American Optical Corp.* v. *Armorlite Lens Co., Inc.*

3,172,289, S. N. Blackman, GLASS THERMOMETER, **filed** May 18, 1972, D.C.N.J. (Newark), Doc. C–864–72, *Seymour N. Blackman* v. *Shulton, Inc.*

3,200,295, Owens and Severson, MANUALLY OPERABLE PIEZOELECTRIC LIGHTERS, **filed** May 17, 1972, D.C., N.D. Ohio (Cleveland), Doc. C72–505, *Vernitron Corporation* v. *Braun A.G.*

3,218,048, Smith and Hartwell, PACKING FOR FRACTIONATING COLUMN AND THE LIKE, **filed** May 17, 1972, D.C.N.J. (Newark), Doc. C–862–72, *Metex Corporation* v. *Chem-Pro Equipment Corporation.*

3,243,567. (See 2,588,744.)

3,257,580. (See 2,588,744.)

3,282,483, K. L. Babcock, BACK PACK, filed Apr. 27, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–929–CC, *Kenneth L. Babcock* v. *Newman Importing Co., Inc.*

3,312,124, Meier and Meier, STEERING-WHEEL ASSEMBLY FOR AUTOMOTIVE VEHICLES, filed May 23, 1972, D.C. Minn. (St. Paul), Doc. 3–72–145, *S. S. Kresge Company* v. *Superior Industries, Inc.*

3,313,443, Dial, Habegger and Kays, FLOATING COVER FOR A LIQUID STORAGE RESERVOIR, filed Apr. 17, 1972, D.C. Oreg. (Portland), Doc. 72–290, *Globe Linings, Inc. and Howard D. Webb* v. *City of Corvallis.*

3,315,454, W. L. Carranza, SYNTHETIC BALING AND TYING TWINES, filed July 27, 1970, D.C., S.D. Fla. (Miami), Doc. 70–1107–C–JLK, *Uxmal Corporation Limited* v. *Wall Industries, Inc. et al.* Consent order, patent valid and infringed by defendants. Defendants permanently enjoined; this case is hereby dismissed with jurisdiction retained of this action for enforcement of this decree and for final determination of the petition of W. L. Carranza, Mar. 17, 1972.

3,352,217, Peters and Bowling, MEANS FOR FORMING LINES OF WEAKNESS IN CEMENTITIOUS FLOORS, PAVEMENTS AND THE LIKE, filed Apr. 14, 1970, D.C., S.D. Tex. (Houston), Doc. 70–H–358, *Harlan J. Peters and Lin W. Bowling* v. *Marshall Compton, doing business as H. Compton Co.* Final judgment, patent valid, defendants have infringed and are enjoined, Mar. 16, 1972.

3,362,829, Landfried and Moneymaker, COATED DRY GLUTEN PRODUCTS AND PROCESS FOR PREPARING SAME, filed May 9, 1972, D.C. Conn. (New Haven), Doc. 15022, *Top-Scor Products, Inc.* v. *Maurice R. Haney, doing business as M. R. Haney Company.*

3,384,004, Perlman and Perlman, COFFEEMAKER, filed May 15, 1972, D.C., S.D. Ill. (Springfield), Doc. S–72–90, *Hill-Shaw Company* v. *Bunn-O-Matic Corporation.*

3,388,574, V. Ignoffo, ATTACHMENT FOR A TUBING BENDER FOR CONTROLLING THE DEPTH OF BEND OF TUBING, filed Mar. 20, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c710, *Vincent E. Ignoffo* v. *Midas International Corporation.*

3,392,992, Baker and Baker, TRAILER CONSTRUCTION, filed May 3, 1972, D.C., N.D. Ind. (South Bend), Doc. 72S87, *Classic Manufacturing, Inc.* v. *International Crafts, Inc., and Travel Equipment Corporation.*

3,409,916, Billig and Schleeweiss, OVAL SWIMMING POOL, filed Mar. 29, 1972, D.C.N.J. (Newark), Doc. 571–72, *Bilnor Corporation* v. *Home & Roam Leisure Products, Inc.*

3,538,848, W. P. Barbour, LATCH MEANS FOR A TRAVELING ROLLER PLATEN ON A SWINGABLE CARRIAGE, filed Sept. 21, 1971, D.C., M.D. Fla. (Tampa), Doc. 71–426–C, *Control Data Corporation* v. *Florida Credit Service Center, Inc., and Rapid Data Systems and Equipment Limited.*

3,572,596, M. J. Dykmans, CABLE STRESSING AND WINDING APPARATUS, filed Apr. 19, 1972, D.C., S.D. Calif. (San Diego), Doc. 72–128–T, *Maximiliaan J. Dykmans and BBR Prestressed Tanks, Inc.* v. *Gulf Oil Corporation.*

3,584,402, J. J. Silverman, SANDAL FOR FOOT CAST, filed May 2, 1972, D.C., E.D. Mich. (Detroit), Doc. 38223, *Ortho Industries, Inc.* v. *S. H. Camp & Company.*

3,612,273, W. R. Pritchett, SEPARATOR, filed May 17, 1972, D.C., S.D. Fla. (Miami), Doc. 72–799–C–JLK, *American Conveyor Corporation* v. *Conveyor Line Products, Inc.*

3,618,895, J. J. Van Gompel, SPREADER FOR DAMAGED CORES; 3,625,046, same, APPARATUS AND METHOD FOR STRAIGHTENING DEFORMED ROLLS OF SHEET STOCK, filed Mar. 27, 1972, D.C., N.D. W. Va. (Elkin), Doc. 72–3–M, *Brammall, Inc.* v. *R.C.S. & S., Inc.*

3,625,046. (See 3,618,895.)

3,627,177, P. Marcus, DISPENSER COMBINED WITH HANGING CLIP FOR INVERTED SUPPORT, filed May 17, 1972, D.C., S.D.N.Y., Doc. 72–C–2100, *Knomark Inc.* v. *Neptune Chemical Corporation of America.*

3,636,903, Anderson and Munn, RECTANGULAR-DUCT FORMING MACHINE, filed May 16, 1972, D.C., N.D. Ind. (South Bend), Doc. 72S102, *Manufacturing Systems, Inc.* v. *ADM Industries, Inc. et al.*

3,649,039, Gertsch and Gertsch, LONGITUDINALLY ADJUSTABLE HEEL LOCKING DEVICE ON A SKI-BINDING, filed Mar. 22, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c735, *Gertsch AG* v. *Safety Systems, Inc.*

3,657,068, M. Ivanowicz, PAPERMAKING FELT, filed May 18, 1972, D.C., S.D. Ohio (Dayton), Doc. 4242, *The Orr Felt Company* v. *Huyck Corporation.*

Re. 25,311. (See 3,031,158.)

Re. 25,542. (See 2,588,744.)

Certificates of Correction for the Week of Sept. 26, 1972

P.P. 3,111	3,629,848	3,648,119	3,660,097
Re. 27,168	3,629,927	3,648,306	3,660,263
Re. 27,177	3,630,191	3,648,843	3,660,316
Re. 27,277	3,630,200	3,648,950	3,660,339
3,385,787	3,630,243	3,649,051	3,660,475
3,447,132	3,630,443	3,649,249	3,660,698
3,507,706	3,630,791	3,649,310	3,660,806
3,517,816	3,630,812	3,649,358	3,660,860
3,518,042	3,631,109	3,649,441	3,660,929
3,519,617	3,631,475	3,649,617	3,661,473
3,529,741	3,635,245	3,649,627	3,661,623
3,547,733	3,635,296	3,649,748	3,661,630
3,548,193	3,635,386	3,651,224	3,661,808
3,558,269	3,635,424	3,651,414	3,662,033
3,565,039	3,635,552	3,651,982	3,662,479
3,575,234	3,636,152	3,652,208	3,663,271
3,576,017	3,636,206	3,652,295	3,663,902
3,576,880	3,636,209	3,652,546	3,665,254
3,584,966	3,636,221	3,653,102	3,665,354
3,585,004	3,636,659	3,653,289	3,665,449
3,588,882	3,636,754	3,653,671	3,665,501
3,591,384	3,636,783	3,653,848	3,666,170
3,591,814	3,637,813	3,653,965	3,666,662
3,593,375	3,637,913	3,653,992	3,666,761
3,596,920	3,637,922	3,654,266	3,667,885
3,602,706	3,638,125	3,654,734	3,667,924
3,608,463	3,638,752	3,655,143	3,668,194
3,610,935	3,639,269	3,655,269	3,668,353
3,612,381	3,639,288	3,655,644	3,668,492
3,616,787	3,639,491	3,655,737	3,668,521
3,617,509	3,639,915	3,656,754	3,669,331
3,619,303	3,641,005	3,657,206	3,669,411
3,620,757	3,641,757	3,657,303	3,669,647
3,621,031	3,642,549	3,657,432	3,669,713
3,622,316	3,642,572	3,657,710	3,669,774
3,624,578	3,642,747	3,657,810	3,669,800
3,626,159	3,642,785	3,658,096	3,670,079
3,626,705	3,644,096	3,658,402	3,670,480
3,627,424	3,644,576	3,658,879	3,671,308
3,627,858	3,644,656	3,659,195	3,672,020
3,627,877	3,645,106	3,659,630	
3,628,970	3,646,854	3,659,649	
3,629,408	3,647,971	3,659,768	

Patent Numbers For Which No Patents Exist

Issue of September 26, 1972

3,693,196	3,693,578	3,693,974	3,694 457
3,693,201	3,693,586	3,693,980	3,694,459
3,693,203	3,693,594	3,693,990	3,694,468
3,693,205	3,693,620	3,693,991	3,694,469
3,693,207	3,693,628	3,693,995	3,694,486
3,693,208	3,693,662	3,694,005	3,694,487
3,693,211	3,693,677	3,694,026	3,694,488
3,693,214	3,693,681	3,694,031	3,694,492
3,693,215	3,693,686	3,694,034	3,694,519
3,693,217	3,693,709	3,694,035	3,694,520
3,693,234	3,693,712	3,694,036	3,694,532
3,693,259	3,693,716	3,694,063	3,694,542
3,693,263	3,693,751	3,694,066	3,694,544
3,693,284	3,693,753	3,694,075	3,694,550
3,693,284	3,693,760	3,694,077	3,694,554
3,693,294	3,693,766	3,694,098	3,694,560
3,693,299	3,693,769	3,694,125	3,694,568
3,693,300	3,693,786	3,694,130	3,694,569
3,693,366	3,693,790	3,694,139	3,694,572
3,693,372	3,693,799	3,694,155	3,694,573
3,693,404	3,693,802	3,694,159	3,694,575
3,693,429	3,693,814	3,694,213	3,694,576
3,693,434	3,693,816	3,694,223	3,694,577
3,693,442	3,693,819	3,694,225	3,694,612
3,693,450	3,693,821	3,694,248	3,694,638
3,693,453	3,693,826	3,694,297	3,694,640
3,693,454	3,693,834	3,694,302	3,694,641
3,693,456	3,693,845	3,694,319	3,694,682
3,693,466	3,693,854	3,694,327	3,694,683
3,693,468	3,693,876	3,694,339	3,694,698
3,693,476	3,693,879	3,694,349	3,694,706
3,693,477	3,693,881	3,694,380	3,694,738
3,693,481	3,693,885	3,694,381	3,694,778
3,693,488	3,693,895	3,694,391	3,694,780
3,693,498	3,693,902	3,694,400	3,694,795
3,693,505	3,693,912	3,694,414	3,694,796
3,693,509	3,693,933	3,694,419	3,694,797
3,693,519	3,693,949	3,694,425	3,694,801
3,693,539	3,693,957	3,694,429	3,694,802
3,693,546	3,693,958	3,694,438	3,694,809
3,693,550	3,693,962	3,694,445	
3,693,551	3,963,968	3,694,453	

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 5, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-19-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	6-01-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-09-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-06-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant). Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-05-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	1-12-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-16-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	9-14-71
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—Director (Vacant). Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-15-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-07-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts: Household, Personal and Fine Arts.	3-01-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-26-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	6-24-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	8-09-71
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	9-02-71
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	7-26-71

Expiration of patents: The patents within the range of numbers indicated below expire during October 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,719,294 to 2,721,998, inclusive
Plant Patents..... Numbers 1,423 to 1,426, inclusive

REISSUES

SEPTEMBER 26, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,484

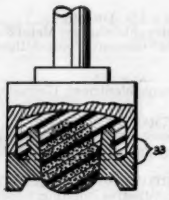
METHOD OF FORMING PARTLY FOAMED PLASTIC ARTICLES

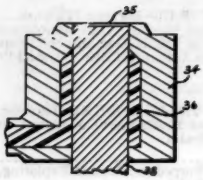
Thomas R. Santelli, Sylvania, Ohio, assignor to Owens-Illinois, Inc.

Original No. 3,144,493, dated Aug. 11, 1964, Ser. No. 847,144, Oct. 19, 1959. Application for reissue June 30, 1966, Ser. No. 569,764

Int. Cl. B29c *17/07;* **B29d** *27/00*

U.S. Cl. 264—45 **16 Claims**





8. In a process for the production of blow molded hollow plastic articles wherein a parison of said plastic is formed and then said parison is expanded within a mold to conform to the contour of said mold by a fluid medium, the improvement comprising incorporating a foaming agent into said plastic prior to formation of said parison so that said parison is foamed before being molded, thereby forming a foamed plastic article as a product of the process.

27,485

DATA PROCESSING SYSTEM EXECUTION RETRY CONTROL

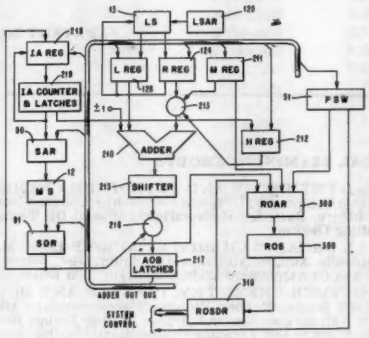
Bruce L. McGilvray, Pleasant Valley, Donald J. Lang, Wappingers Falls, William E. Boehner, Poughkeepsie, and Mark W. Bee, Hopewell Junction, N.Y., by International Business Machines Corporation, assignee, Armonk, N.Y.

Original No. 3,533,065, dated Oct. 6, 1970, Ser. No. 697,738, Jan. 15, 1968. Application for reissue Mar. 26, 1971, Ser. No. 128,432

Int. Cl. G06f *11/00*

U.S. Cl. 340—172.5 **45 Claims**

An electronic data processing machine including hardware controls for providing re-execution of instructions upon detection of a machine malfunction. The illustrative embodiment shows an electronic data processing machine which contains a read only control storage which controls execution of instructions contained in a stored



program. Upon detection of an error, hardware controls will restore the machine to a previous correct state and attempt re-execution from said previous correct state.

27,486

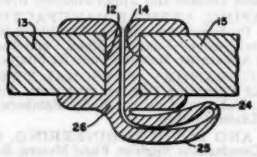
EXPANSIBLE CARRYING CASE WITH WEB HAVING TWO STABLE STATES

Herbert Gordon Dyke, Little Silver, N.J. (206 E. 35th St., New York, N.Y. 10016)

Original No. 3,480,118, dated Nov. 25, 1969, Ser. No. 663,038, Aug. 24, 1967. Application for reissue Nov. 23, 1971, Ser. No. 201,534

Int. Cl. A45c *7/100*

U.S. Cl. 190—44 **18 Claims**

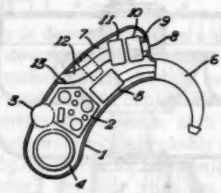


Expansible carrying case with a peripheral web about an expansion joint. The web holds the joint contracted or opened up, and in opened state serves as the wall for that portion of the carrying case. The web has two stable states, flat or folded, and can be flipped over from one to the other. If it folds in, it has at least one somewhat stiff strip that tends to push out flat. If it folds out, it has an elastic pull that tends to hold it in flat.

27,487
DIRECTIONAL HEARING AID

Otto Hassler, Hamburg, Germany, assignor to Willco-Hargerate Medizinische Apparatebau, G.m.b.H., Hamburg, Germany

Original No. 3,458,668, dated July 29, 1969, Ser. No. 559,505, Dec. 6, 1966. Application for reissue May 17, 1971, Ser. No. 143,768
Int. Cl. H04r 25/02
U.S. Cl. 179—107 H 11 Claims

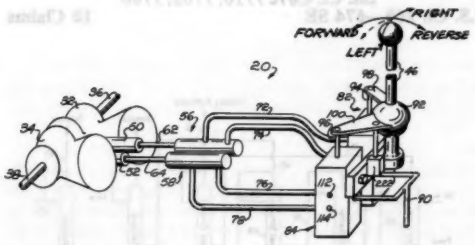


A directional hearing aid with two microphones mounted in back to back relationship. An acoustic resilient seal disposed around the aperture between one of the microphones and a forward facing opening in the housing. A flexible conduit is disposed between the other microphone and a rearward facing opening in the hearing aid.

27,488
HYDROSTATIC TRANSMISSION CONTROL SYSTEM

Robert B. Lauck, Southfield, Mich., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

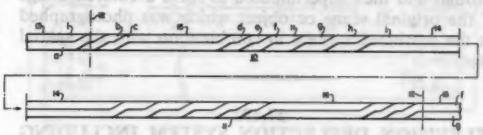
Original No. 3,540,220, dated Nov. 17, 1970, Ser. No. 716,204, Mar. 26, 1968. Application for reissue Dec. 20, 1971, Ser. No. 210,255
Int. Cl. F02b 41/00; F15b 11/16; B26d 11/00
U.S. Cl. 60—19 43 Claims



Disclosed herein is a hydraulic control system for controlling the operation of a pair of hydrostatic transmissions. The hydraulic control system includes two control cylinder assemblies and two valve assemblies, one of each being associated with one of the hydrostatic transmissions. In one embodiment, a single manually operable actuator member is provided for operating the valve assemblies which in turn control the cylinder assemblies to regulate the direction of operation and the input to output speed ratio or drive ratio of the hydrostatic transmissions. An antistall means is associated with each of the hydrostatic transmissions for reducing the output speed of the associated hydrostatic transmission when a sensor assembly detects an impending stalling of an engine or source of power connected to the hydrostatic transmission.

27,489
TRANSPOSED CONDUCTOR FOR DYNAMO-ELECTRIC MACHINES

William C. Brenner, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original No. 3,614,497, dated Oct. 19, 1971, Ser. No. 22,474, Mar. 25, 1970. Application for reissue Jan. 11, 1972, Ser. No. 216,971
Int. Cl. H02k 3/14
U.S. Cl. 310—213 14 Claims

This invention is a transposed stranded conductor bar or half coil for dynamoelectric machines that is effective in canceling out induced voltages, including the voltages induced in the end portions thereby minimizing eddy current losses and circulating currents in the conductor.

27,490
ELECTROSTATIC PRINTING

Harold G. Greig, Princeton, N.J., assignor to RCA Corporation

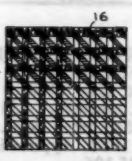
No Drawing. Original No. 3,053,688, dated Sept. 11, 1962, Ser. No. 805,740, Apr. 13, 1959. Application for reissue June 18, 1963, Ser. No. 289,463
Int. Cl. B44d 1/02; G03g 9/00
U.S. Cl. 117—37 LE 18 Claims

An improved liquid developer for a xerographic image consisting essentially of finely divided pigment particles, an organic dielectric material capable of forming a resinous coating, coating said pigment particles and insuring that the particles have a charge of substantially uniform polarity and magnitude, and a carrier liquid, for example, dimethyl polysiloxane, for said pigment particles in which said material is insoluble. The improved liquid developer is used in developing an electrostatic image on an insulating surface by applying said developer to said surface, depositing the developer particles on said surface by electrostatic attraction thereto, and heating said surface to fuse said particles thereto and remove the carrier liquid.

27,491
PHOTOGRAPHY USING SPATIAL FILTERING

Albert Macovski, Palo Alto, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Original No. 3,504,606, dated Apr. 7, 1970, Ser. No. 651,077, Apr. 28, 1967, which is a continuation-in-part of Ser. No. 466,547, June 24, 1965. Application for reissue Oct. 15, 1970, Ser. No. 81,192
Int. Cl. G03b 29/00, 33/00
U.S. Cl. 95—12.2 13 Claims



There is provided by this invention a spatial filter which has the property that when it is placed adjacent to a sensitized material, such as panchromatic film of the types used

in black and white photography or thermoplastic material, that the different colors of light passing through that filter onto the sensitized material are encoded. Thereafter, when the developed transparency, which is made from the sensitized material has light projected therethrough, this light may be focused at a focal plane at which there is presented three diffracted images respectively disposed about a central or real image. By using a mask with the proper colored gelatins therein, the three diffracted images only may be permitted to pass therethrough and then superimposed to form a colored image of the original scene or object which was photographed on the sensitized surface in combination with the spatial filter.

27,492

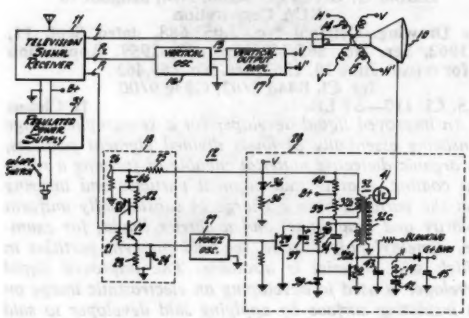
TELEVISION DEFLECTION SYSTEM INCLUDING AFC CIRCUIT WITH REGENERATIVE PHASE DETECTOR

Carl Franklin Wheatley, Jr., Somerset, N.J., assignor to RCA Corporation

Original No. 3,441,673, dated Apr. 29, 1969, Ser. No. 583,609, Oct. 3, 1966. Application for reissue Dec. 8, 1970, Ser. No. 96,298

Int. Cl. H04n *3/16, 5/04*

U.S. Cl. 178—69.5 TV **14 Claims**



A horizontal deflection circuit for a television receiver includes an AFC circuit utilizing two transistors of opposite conductivity type coupled in a regenerative configuration. A reference signal and a sync signal are supplied to the transistors to produce the requisite oscillator control signal for AFC purposes. A deflection waveform generating circuit is also disclosed. The latter circuit utilizes an output transistor coupled to a deflection winding and a diode coupled in series with the base-collector circuit of the transistor to provide damping for reverse deflection coil current.

27,493

METHOD AND APPARATUS FOR CENTRIFUGAL SEPARATION

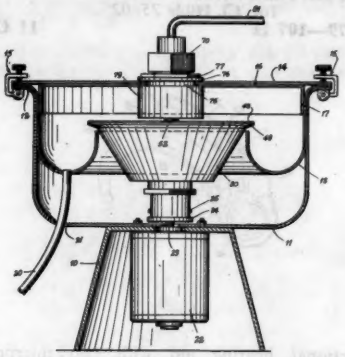
William Laut, 12647 Tallow Hill Lane, St. Louis, Mo. 63141

Original No. 3,464,554, dated Sept. 2, 1969, Ser. No. 720,530, Apr. 11, 1968. Application for reissue Jan. 8, 1971, Ser. No. 105,106

Int. Cl. B01d *33/02;* **B04b** *3/00*

U.S. Cl. 210—78 **11 Claims**

A centrifugal filter bowl or receptacle is rotated in a housing to expel fluid upwardly and out a peripheral filter passage formed between compressed finished peripheral surfaces of the receptacle and its top. A center post in the receptacle is tubular, opens through the top, and connects through a union mounted in the housing, with a source of fluid. The interior of the receptacle is sealed except for the filter passage. When the receptacle rotates,



it centrifugally ejects fluid through the peripheral fluid passage, drawing new fluid by suction through the inlet to the bottom of the receptacle whence it flows with a scrubbing action up the wall of the receptacle to the filter passage.

27,494

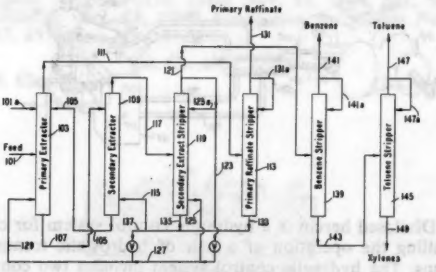
SEPARATION OF AROMATIC HYDROCARBONS FROM NONAROMATIC HYDROCARBONS

John R. Anderson, Mount Kisco, and George S. Somekh, New Rochelle, N.Y., by Union Carbide Corp., assignee

Original No. 3,492,365, dated Jan. 27, 1970, Ser. No. 553,336, May 27, 1966. Application for reissue Feb. 26, 1971, Ser. No. 119,063

Int. Cl. C07c *7/10, 7/02, 7/00*

U.S. Cl. 260—674 SE **10 Claims**



Aromatic hydrocarbons are separated from a mixture containing the same together with nonaromatic hydrocarbons. The mixture is first contacted with a solvent which selectively dissolves the aromatic fraction and the extract from this step which contains the aromatic hydrocarbon dissolved in the solvent is subjected to a secondary extraction step using a solvent which has a higher boiling point than and is non-azeotropic with the original feed mixture. Thereafter the aromatic hydrocarbons are recovered by a series of distillation steps.

27,495

ROCKABLE CLOSURE DEVICE FOR MATERIAL CUTTING MACHINE

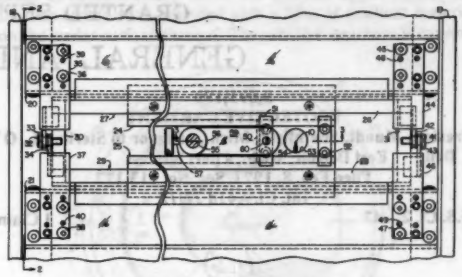
Herman J. Baldwin, Cincinnati, Ohio, and George W. Sederberg, Alexandria, Ky., assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Original No. 3,529,501, dated Sept. 22, 1970, Ser. No. 789,879, Jan. 8, 1969. Application for reissue Mar. 22, 1971, Ser. No. 126,570

Int. Cl. B26d 7/02

U.S. Cl. 83—145 8 Claims

Closure means is disposed between a pair of rockably supported hold down housings, which exert a predetermined force on material being cut by a cutting blade of a material cutting machine. The closure means includes first and second members spaced from each other with the members being supported by the rockably supported housings to allow the members to move with the rockably supported [housing] *housings* when the material has a hump therein. The closure means has a third member slidably supported between the first two members and



movable transversely with the cutting blade of the material cutting machine.

PATENTS

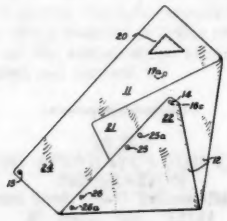
GRANTED SEPTEMBER 26, 1972

GENERAL AND MECHANICAL

3,693,189
PROTECTIVE GARMENT
Trexie I. Mundt, Southfield, Mich., assignor to Sterling L. O'Dell, East Detroit, Mich., a part interest
Filed Feb. 8, 1971, Ser. No. 113,177
Int. Cl. A41d *27/12*
U.S. Cl. 2—47 **1 Claim**

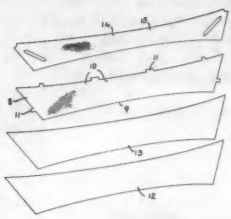
A protective garment comprising a seamless, transparent, plastic body of tubular design having gathered elastic loops at the opposite ends thereof. In one embodiment, the loops are of such size as to be worn about the waist and the length of the body is such as to extend along both the inside and the outside of a coat or other piece of feminine apparel to be protected. In another embodiment, the body is of such length as to be worn between the upper thigh and the ankle and the opposite ends thereof are provided with elastic loops of differing sizes, one end to be worn about the upper thigh and the other end to be worn about the ankle.

3,693,190
INFANT WRAPPING BLANKET
Diane L. Hickling, Harrisville Road, Mt. Airy, Md.
Filed Oct. 21, 1970, Ser. No. 82,569
Int. Cl. A41b *13/06*
U.S. Cl. 2—69.5 **12 Claims**



A baby's wrap having a rectangle configuration and being adapted to receive the infant's head on an identified corner with the body extending diagonally across the wrap; there being fastening means on the face of the wrap located at the corner diagonally opposite the corner for receiving the infant's head and at a further corner across from the location for receiving the infant's head. Two groups of further fastening means are located on the back of the wrap between the position for receiving the infant's head and the adjacent lower corner. This lower corner is pulled over the infant and the fastening means on the opposite corner is secured to one set of the fastening means on the back of the wrap. Next the further lower corner is folded over and the fastening means thereon secured to fastening means in the other set on the back of the wrap. Fastening means on the back in adjacent sets provides for adjusting the size and shape of the space formed to receive the infant. Further securing means may be provided on the longer edge of the wrap opposite the position for receiving the infant's head; one on the wrap's face and the other on its back. Such fastening means together with others may also be utilized as a shawl for the infant. In one embodiment, the wrap is elongated and cooperating fastening means are provided on the longer edges thereof so that when the wrap is folded across its midline, the fastening means may be secured to provide a pocket for diapers and the like while the outside of the structure thus formed may function as a wrap as described above, or as a mat or carrier for the infant.

3,693,191
SHIRT COLLAR AND METHOD OF MAKING SAME
Reg H. Dowsett, Kitchener, Ontario, Canada, assignor to John Forsyth Co., Ltd., Kitchener, Ontario, Canada
Filed June 3, 1971, Ser. No. 149,654
Int. Cl. A41b *3/00*
U.S. Cl. 2—131 **6 Claims**



A shirt collar or like garment item having a seamed outer edge is made by superposing inner and outer plies on one side of an interlining, superposing a panel of one-sided fusing fabric on the other side of the interlining, and stitching the assembly by a single seam conforming to the marginal edge of the interlining. The assembly is then turned by turning the inner ply over the seam, and the collar or like item is pressed.

3,693,192
SICKBED BARF BAGS
Darlene P. Knotts, 533 E. Maplewood Dr., Littleton, Colo.
Filed Sept. 25, 1970, Ser. No. 75,441
Int. Cl. A61g *7/06*; A61j *19/00*
U.S. Cl. 4—267 **1 Claim**

A single elongated sheet of waterproof flexible material is horizontally and medially folded to form both an open-topped lower container and an upper lid for the container. The container is preformed by folding the two sides of the lower portion of the sheet inwardly and adhesively securing them to each other and to the bottom of the sheet. The inwardly folded sides have overlapping accordian-like folds to permit expansion of the open top of the container. The accordian-like folds extend upwardly along the opposite sides of the lid to form a

trough for directing material into the open top of the container. Suspension means are provided for suspending the

open container by its lid and for closing the open top when desired.

3,693,193

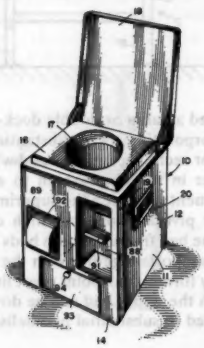
PORTABLE SANITARY TOILET

Randall L. May, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Nov. 23, 1970, Ser. No. 92,107

Int. Cl. A47k *11/02*

U.S. Cl. 4—142 **12 Claims**



A portable sanitary toilet which utilizes an elongated flexible plastic tube to collect waste material is provided with an operating mechanism for advancing and sealing the tube after each use. The operating mechanism includes a pair of rotatably mounted pincher arms which are resiliently biased toward each other to seal the tube therebetween until the tube is to be advanced. A pair of roller-equipped axles are rotatably mounted below the sealing portions of the pincher arms, and the axles are resiliently biased toward each other to form a tube-advancing nip between the engaging rollers. A foot crank is secured to one of the pincher arms to impart rotation to that pincher arm, and the other pincher arm is caused to rotate by a crank follower arm which engages the crank. A gear and ratchet connection between the crank and one of the axles causes the rollers to rotate when the pincher arms are separated to advance the tube and the collected waste material. Upon release of the foot crank, the pincher arms return to seal the tube.

3,693,194

THERAPEUTIC POOL

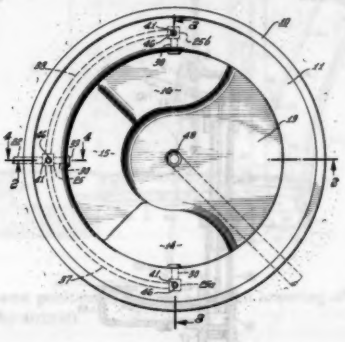
Ted Schindler, 6510 Mount Rainier Drive, Bakersfield, Calif., and Henry Dumler, 1019 S. "H" St., Bakersfield, Calif.

Filed Oct. 23, 1970, Ser. No. 83,297

Int. Cl. E04h *3/16, 3/18*

U.S. Cl. 4—172.17 **12 Claims**

A therapeutic pool comprised of a one-piece fiberglass molding in the shape of a tub-like structure. Adjacent arcuate portions of the side walls of the tub-like structure are curved horizontally inwardly at different levels to provide seats at different heights within the structure. A wide ledge which extends circumferentially about the circular upper end of the tub-like structure is provided with a filler of resilient material on the under surface thereof. The tub-like structure is capable



of being readily installed within an excavation with its ledge extending over the ground level edge surface of the excavation and seated thereagainst by the filler of resilient material. Agitation of water in the pool is accomplished either by drawing air into the inflowing stream as it is supplied in the pool or by actually forcing air under pressure into the stream.

3,693,195

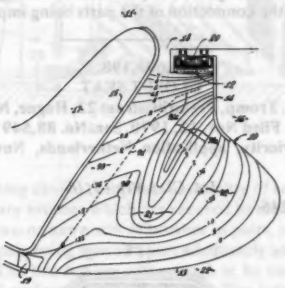
APPARATUS FOR SURF GENERATION

George E. Richard, 6507 Seaside Walk, Long Beach, Calif., and Eugene D. Richard, 11570 Victory Blvd., Hollywood, Calif.

Filed July 20, 1970, Ser. No. 56,314

Int. Cl. E04h *3/16, 3/18*

U.S. Cl. 4—172.16 **15 Claims**

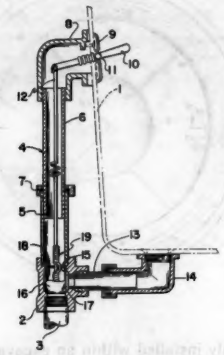


A tapered enclosure for a body of water has a wave generator positioned in a relatively narrow and deeper end. In one form, the wave generator is a buoyant plunger mounted for vertical reciprocation within a chamber having a shorewardly facing opening. Through a cyclic control system, the plunger is driven in phase with the forces of gravity and buoyancy acting thereon, starting from a rest position through strokes of increasing amplitude until a desired steady state is attained to sequentially produce waves of a desired energy. Provision is made for varying the mass of the plunger and varying the input from a prime mover as a means of adjusting wave energy and frequency.

3,693,196

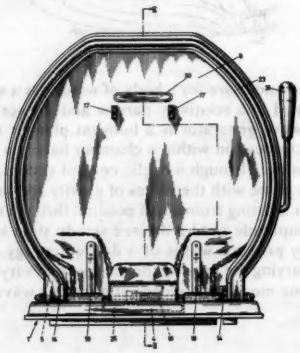
Patent Not Issued For This Number

3,693,197
BATH DRAIN LIFT WIRE CONNECTION
Gerald E. Christiansen, Flora, Ind., assignor to Stephen A. Young, Monticello, Ind.
Filed Oct. 30, 1970, Ser. No. 85,549
Int. Cl. E03c *1/232*
U.S. Cl. 4—203 6 Claims



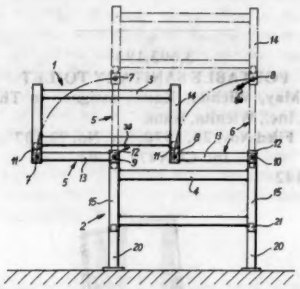
The disclosure herein relates to bath tub drains and particularly to that class known as trip lever bath tub drains, wherein a single drain may be supplied for tubs of various sizes in which the overflow opening is at varying heights from one tub to the other, and it is desired to mount the bath tub drain thereon without preliminary setting of the stopper means therein, but relying upon adjustment of the connection of the stopper means with the operating means after assembly and upon insertion of the respective parts, it being desired to establish the adjustment and once established, to maintain the same without subsequent attention. The bath tub drain hereof is therefore provided with means to effect the adjustment of the plunger in the trip lever upon manipulation of the control means therefor initially in view of the connection of the lift means with the plunger, the aspect of maintaining the position by reason of the connection of the parts being important.

3,693,198
CLOSET SEAT
Gerardus M. Tromp, Pretoriusstraat 22, Hague, Netherlands
Filed Nov. 12, 1970, Ser. No. 88,549
Claims priority, application Netherlands, Nov. 13, 1969, 6917097
Int. Cl. A47k *13/16*
U.S. Cl. 4—246 13 Claims



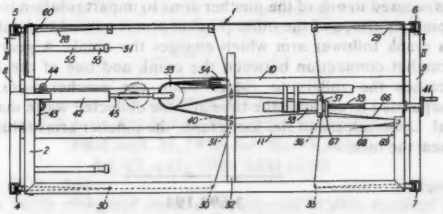
A closet seat for a lavatory bowl is pivotally mounted on a supporting back plate for movement between approximately vertical and approximately horizontal positions and a supply of sanitary paper sheets carried by the back plate; when the closet seat is moved to its vertical position, an automatically operated clamping strip attaches one of the paper sheets to the closet seat for movement therewith when the closet seat is moved to its horizontal position.

3,693,199
DOUBLEDECK-BED ARRANGEMENT
Hans Fickler, Ursulaweg 20, Winterthur, Switzerland
Filed Feb. 5, 1971, Ser. No. 112,958
Claims priority, application Switzerland, Feb. 20, 1970, 2454/70
Int. Cl. A47c *17/40*
U.S. Cl. 5—8 9 Claims



There is disclosed a cabin or double deck-bed arrangement of the type incorporating two substantially similar beds providing repose or reclining surfaces and which are arranged above one another in tier-like fashion to afford the double deck-bed arrangement. Between the superimposed beds there are provided four pivotal supports which connect the head and foot ends of the bed frames of both beds with one another. Each two pivotal supports together with the bed frames interconnected thereby form a four-point pivot linkage mechanism by means of which the upper bed can be downwardly pivoted while being retained in substantial parallelism with respect to the lower bed.

3,693,200
BEDS
John Neville Stafford, 11 S. Wharf Road, London, W.2, England
Filed Dec. 28, 1970, Ser. No. 101,852
Claims priority, application Great Britain, Dec. 29, 1969, 63107/69; March 2, 1970, 9912/70
Int. Cl. A61g *7/10*
U.S. Cl. 5—68 7 Claims



This invention concerns a bed frame comprising a platform and a supporting structure therefor, the said supporting structure comprising rigid uprights between which the platform is supported or is adapted to be supported, the said platform having carrying members for slideable engagement with the said uprights and the said platform being suspended or adapted to be suspended from the said uprights by at least one

flexible elongated suspension member which passes or is adapted to pass beneath the said platform, a first operating means being provided for shortening or lengthening the or each said suspension member to effect raising and lowering of the said platform which respect to the said supporting structure and second operating means being provided for shortening and lengthening the or those of the suspension members necessary to effect tilting of the platform.

3,693,201

Patent Not Issued For This Number

3,693,202

SEA RESCUE BALL UNIT

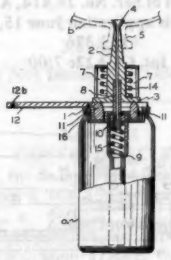
Takemitsu Ohtani, 1-605, Shimotoyooka-cho, Gumma pref., Takasaki, Japan

Filed Aug. 21, 1970, Ser. No. 65,974

Claims priority, application Japan, Sept. 1, 1969, 44/82991; Jan. 26, 1970, 45/8117

Int. Cl. B63c *9/18*

U.S. Cl. 9—317 **4 Claims**



A sea rescue ball unit which comprises a plastic ball, a life belt folded into compact form and disposed in said plastic ball and having a gas bomb containing a compressed gas therein with an opening thereof normally being closed with a water-soluble solid, and which is operative in such a manner that, when the ball unit is dropped onto the sea, the water-soluble solid is dissolved in the sea water and the gas in the gas cartridge is injected into the life belt through the opening thereof.

3,693,203

Patent Not Issued For This Number

3,693,204

CLOSURE APPARATUS

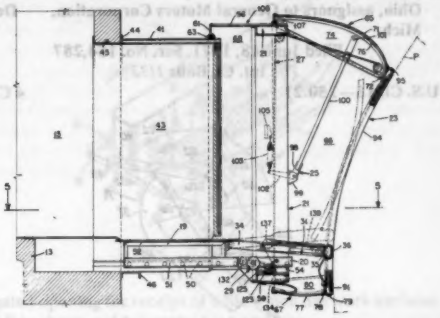
Walter S. Eggert, Jr., Huntingdon Valley, Pa., assignor to Boothe Airside Services Inc.

Filed Sept. 24, 1970, Ser. No. 75,035

Int. Cl. B65g *11/00*

U.S. Cl. 14—71. **9 Claims**

Closure apparatus for a walkway which closes the small gap remaining after the walkway has been aligned with a doorway opening in a structure such as a parked aircraft. The apparatus includes an inclinable threshold ramp which will follow lateral excursions of the airplane with a constant force contact. The threshold ramp includes apparatus which cooperates with the parked aircraft door to release the threshold to enable it to go to its lowest position in case of a sudden lowering of the position of the aircraft.



3,693,205

Patent Not Issued For This Number

3,693,206

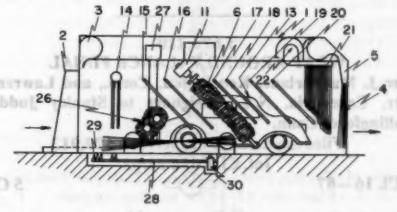
CAR WASHING DEVICE

Seizo Tatara, 18, Takidai-cho, Chiba-ken, Funabashi-shi, and Yoshio Ohdachi, 1477, Higashiterao-cho, Tsurumi-ku, Kanagawa-ken, Yokohama-shi, both of Japan

Filed May 13, 1970, Ser. No. 36,728

Int. Cl. B60s *3/06*

U.S. Cl. 15—21 D **6 Claims**



A car washing device comprises a plurality of soft and small diameter rotary brushes which are secured to resilient flexible shafts, with two or more sets of brushes in pairs, and with two brushes in a pair being spaced apart adequately and rotated at low speeds. The brushes are soft enough to be compressed to every curved surface of an automobile. The latter brush assembly forms part of an entire car washing installation through which automobiles are automatically drawn while suitable devices are arranged along the installation for washing, polishing and drying each automobile as it passes through the installation.

3,693,207

Patent Not Issued For This Number

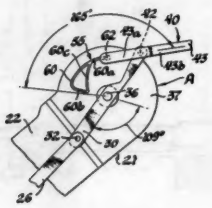
3,693,208

Patent Not Issued For This Number

3,693,209
WINDSHIELD WIPER UNIT

Herbert E. Winkelmann, and Roy C. Bodem, both of Kettering, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed June 18, 1971, Ser. No. 154,287
Int. Cl. B60s 1/32
U.S. Cl. 15—250.21 4 Claims

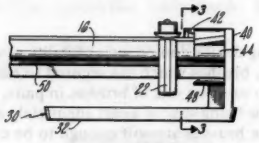


In a preferred form, this disclosure relates to a window wiping apparatus for wiping a tailgate window of a station wagon vehicle. The window wiping apparatus includes an oscillatable window wiper, a support means, a crank arm pivotally supported intermediate its ends by the support means for movement in opposite directions and which has one end pivotally connected to the wiper intermediate the ends of the latter, a drive mechanism operatively connected adjacent the other end of the crank arm for oscillating the same through a given angular extent, an arcuate stationary cam track on the support means and a cam follower means carried by the wiper adjacent its lower end and which is received in the cam track. The cam track guides the movement of the wiper as the latter is oscillated by the crank arm and causes the wipers to be oscillated through an arcuate extent which is substantially greater than the given angular extent the crank arm is rotated.

3,693,210
WRAP-AROUND VALANCE FINIAL

Walter J. MacFarlane, Kensington, Conn., and Lawrence P. Feer, Cazenovia, N.Y., assignors to Stanley Judd, Wallingford, Conn.

Filed Sept. 13, 1971, Ser. No. 179,913
Int. Cl. E05d 13/02
U.S. Cl. 16—87 5 Claims



A generally rectangular telescoping cafe traverse rod has a longitudinal slot on the back wall thereof and end finials decorating its ends. The end finials are wrap-around valance-type finials having a flat front face suited for custom home decoration by the application of fabric or paper, extend toward each other a limited distance in front of the rod, and are spaced forwardly of the rod to permit the passage of the ring glides between them and the rod. A tongue on each end finial is positioned in the slot and other projections provided by the finial engage the front, bottom, and back walls of the rod to non-rotatably support and resiliently clamp the end finials to the rod and reinforce the rod.

3,693,211
Patent Not Issued For This Number

3,693,212
CARPET ANCHORING MEANS

James W. Handy, Rte. 1, Box 799, Benton, Ark.

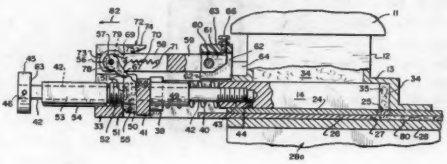
Filed Dec. 10, 1969, Ser. No. 883,742
Int. Cl. A47g 27/04
U.S. Cl. 16—16 1 Claim

A plurality of pins are driven into a carpet retaining strip having one edge adjacent one wall of the building. The pins are driven at an angle downwardly away from the wall and the pointed lower end of each pin is clinched by a suitable machine into the bottom of the retaining strip. The lower end of each pin will be bent back toward the wall to clinch into the bottom of the strip. The upper end of each pin is pointed to penetrate the carpet to hold it in position and the pull of the carpet against each pin tends to increase the clinching action against the bottom of the strip.

3,693,213
MOLDING APPARATUS

James A. Holly, Richton Park, Ill., assignor to Hollymatic Corporation

Continuation-in-part of Ser. No. 26,814, April 9, 1970, Pat. No. 3,654,665. This application June 15, 1971, Ser. No. 153,376
Int. Cl. A22c 7/00
U.S. Cl. 17—32 18 Claims



A molding apparatus for forming articles and particularly patties from a moldable material and specifically ground meat, fish and the like in which there are a hopper for retaining the material and including an extruding section with passage means from this section, a feeder in the extruding section movable away from and toward a position adjacent the passage means to force material therethrough, a movable mold having a mold opening movable away from and toward the passage means out of and into communication therewith to receive material from the extruding section when the opening is in communication with the passage means and the feeder is in its adjacent position and a catch operatively engaging the feeder comprising a pivoted lever having a latch portion of extensive surface area engaging a retainer also having a retaining portion of similar surface area to retain the feeder adjacent the passage until the mold opening has been moved out of communication with the passage.

3,693,214
Patent Not Issued For This Number

3,693,215
Patent Not Issued For This Number

3,693,216

ANIMAL SHACKLING DEVICE

Donald J. Willems, Woodbridge, Ill., and Everett F. Markey, Omaha, Nebr., assignors to Armour and Company, Chicago, Ill.

Filed April 13, 1971, Ser. No. 133,673
Int. Cl. A22b 5/02
U.S. Cl. 17—24 10 Claims

A tension adjusting device, alongside a conveyor frame, which provides a meat animal passage, and alongside a shackle-equipped animal transportation track, is supported inwardly of the shackle chain for movement up and down or toward and away from the passage so as to yield when the shackle is applied to an animal's leg and then to swing outwardly and/or down to maintain tension upon the attached shackle as the animal moves through the passage.

3,693,217

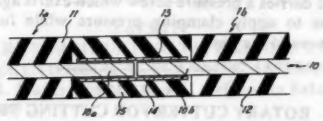
Patent Not Issued For This Number

3,693,218

CONVEYOR BELTS

Pierre Jaubert, 12, rue de la Meulomiere, 92 Rueil-Malmaison, and Jean Lassere, 9, rue Albert Lawrenson, 92 Boulogne, both of France

Filed Oct. 6, 1971, Ser. No. 186,953
Claims priority, application France, Oct. 12, 1970, 7036843
Int. Cl. F16g 3/00; B32b 7/08
U.S. Cl. 24—38 9 Claims



This invention relates to conveyor belts and particularly to methods for making a joint in a conveyor belt that is made from rubber or like elastomeric material, that is provided with a reinforcement constituted by at least one layer of longitudinal metal cables. In accordance with the invention, two connecting strips of longitudinal metal cables are positioned in bridge fashion over the abutting ends of the reinforcing layer of two belt portions and these strips are placed on either side of the reinforcing layer to which they are connected by a thin layer of rubber or like elastomeric material, which adheres to both of them.

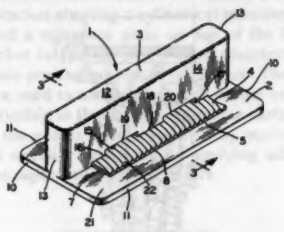
3,693,219

SHARPENING DEVICE

Douglass R. Falkenberg, Rocky River, Ohio, assignor to Douglass Manufacturing Company

Filed March 22, 1971, Ser. No. 126,419
Int. Cl. B23d 71/00
U.S. Cl. 29—78 6 Claims

A sharpening device for sharpening metal edges of skiis having a base portion and a handle and guide portion mounted at a right angle on the base portion. The base portion contains an elongated opening for receipt of a file which has work surfaces extending above and below the base portion.

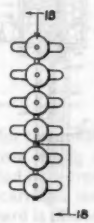


3,693,220

WING HEADED FASTENERS AND PROCESS FOR ATTACHING SAME

Richard W. Pabich, c/o Acme-Lane Co., 4904 W. Fullerton, Chicago, Ill., and Richard W. Treiber, deceased, late of 1340 Sherwood Road, Glenview, Ill. (by E. Louise Treiber, executrix)

Division of Ser. No. 800,362, Feb. 12, 1969, Pat. No. 3,612,378, and a continuation-in-part of Ser. No. 615,830, Feb. 13, 1967, abandoned, and a continuation-in-part of Ser. No. 689,939, Nov. 24, 1967, Pat. No. 3,429,013, and a continuation-in-part of Ser. No. 777,652, Nov. 21, 1968. This application July 23, 1970, Ser. No. 63,984
Int. Cl. A44b 17/00; B25c 3/00; B27f 7/00
U.S. Cl. 24—221 R 10 Claims



The invention provides (a) a strip of wing headed fasteners integrally interconnected by means of a thin web and (b) a method of using the strip. These strips are inserted into a magazine in air tools that force nails therein. Uniquely formed wing headed fasteners and tool attachments are correspondingly adapted to each other to enable the wing headed fasteners to be pivotally mounted to said members with the nails from the tool for releasably holding a first member, such as a cabinet backing in a position relative to a second member such as a cabinet frame therebehind.

3,693,221

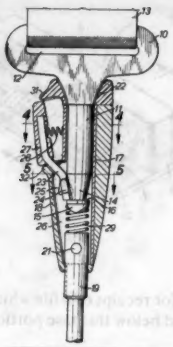
SAFETY SEAT BELTS FOR VEHICLES

Douglas J. Cunningham, Chichester, England, assignor to Wingard Limited, Chichester, Sussex, England

Filed Feb. 27, 1970, Ser. No. 14,916
Claims priority, application Great Britain, March 7, 1969, 12,084/69
Int. Cl. A44b 11/26
U.S. Cl. 24—230 AU 5 Claims

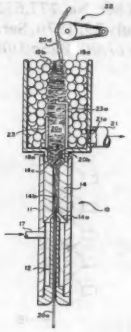
In a safety seat belt assembly for vehicles in which lap and diagonal straps are attached to one part of a two part separable buckle that part has a shank adapted to enter a socket in

the second part which is secured to the floor of a vehicle and the second part incorporates a releasable spring-pressed latch



co-operating with a shoulder on the shank on the first part when that is pushed home into the socket.

3,693,222
YARN TEXTURING APPARATUS
John B. Caffry, Greenville, S.C., assignor to Phillips Petroleum Company
Filed Dec. 28, 1970, Ser. No. 102,014
Int. Cl. D02g 1/12
U.S. Cl. 28—1.6 **10 Claims**



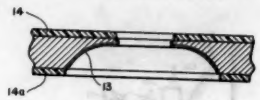
Yarn is textured by passage at an elevated temperature into a zone of turbulence. The resulting textured yarn is passed through a first chamber defined by a sleeve into a second chamber which contains a plurality of stacked balls. These balls exert a force on the yarn to produce a confined wad. Fluid employed to produce the turbulence zone is separated from the textured yarn in the two chambers.

ERRATUM

For Class 29—78 see:
Patent No. 3,693,219

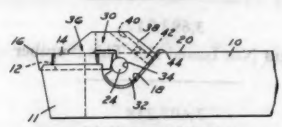
3,693,223
SCREENING PROCESS FOR COLOR CATHODE-RAY TUBE
Sam H. Kaplan, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Division of Ser. No. 866,694, Oct. 8, 1969, Pat. No. 3,599,503.
This application Dec. 30, 1971, Ser. No. 214,281
Int. Cl. H01j 9/16, 9/44
U.S. Cl. 29—25.13 **8 Claims**

The aperture mask of a color cathode-ray tube is formed of a blank of annealed steel which has a multiplicity of apertures disposed in a rectangular field. The opposed surfaces of the blank have etchant resistant oxide layers and the walls of the apertures are lined with a flash coating of a material which is resistant to oxidation but is subject to attach by the same etchant that attacks the material of the blank. The apertured blank is used for photographic printing of the screen of the



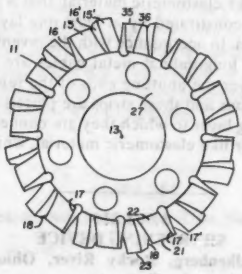
color tube after which it is subject to an etch bath which first removes the liner and then, by attacking the walls of the apertures, enlarges them to a size exceeding the phosphor deposits of the screen. With the apertures enlarged, and with the oxide layers retained, the mask is installed in operative position relative to the screen.

3,693,224
GROOVING TOOL
Joseph G. Bartoszevicz, Plantsville, Conn., assignor to Fansteel Inc., North Chicago, Ill.
Filed March 8, 1971, Ser. No. 121,838
Int. Cl. B26d 1/00
U.S. Cl. 29—96 **1 Claim**



A toolholder clamp combination which includes a body having a forward seat area for a cutting insert, there being a recess behind the seat area in a side wall of a body with a fulcrum pin embedded into the toolholder within this recess. A tool clamp then has a portion which fulcrums on this pin, the forward portion of the pin serving as an indexing stop for the insert. The remainder of the clamp curves up and over the insert and carries a pressure screw which exerts against a wall of a recess to apply clamping pressure while fulcruming the clamp around the pin.

3,693,225
ROTARY CUTTER FOR CUTTING TEETH
Ernest Wildhaber, 124 Summit Drive, Rochester, N.Y.
Filed March 16, 1971, Ser. No. 124,729
Int. Cl. B26d 1/00
U.S. Cl. 29—103 R **14 Claims**



These rotary cutters for cutting teeth in rotating cylindrical workpieces contain cutting teeth inclined to the peripheral direction of the cutter and arranged in two or more circles about the cutter axis. Said circles have different positions axi-

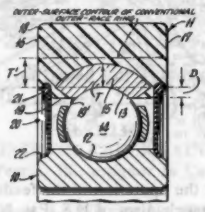
ally of the cutter. Each of said circles contains identical cutting teeth different from the cutting teeth of the other circles. Preferably the cutting teeth extend lengthwise at a constant distance from the cutter axis, along helices.

3,693,226

METHOD OF MAKING AN ANTIFRICTION BEARING RING

Ralph S. Howe, Jr., New Britain, Conn., assignor to Textron, Inc., Providence, R.I.

Division of Ser. No. 868,736, Oct. 23, 1969, Pat. No. 3,640,592. This application Jan. 7, 1971, Ser. No. 104,569
Int. Cl. B21h *1/12*
U.S. Cl. 29—148.4 R 12 Claims



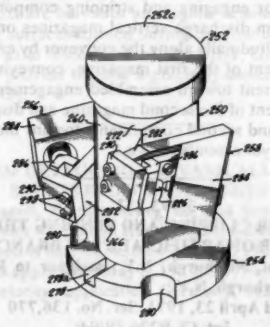
The invention contemplates a major economy in the metal required for manufacture of an antifriction bearing ring, such as the outer-race ring of a ball bearing, said economy being realized without loss of integrity of the race or its radial-load capability, as compared with a conventional all-metal race-ring construction of equivalent capacity. Economy is realized by forming an insert from a cylindrical annulus of a deformable and hardenable material, such as ductile steel, the deformation being to create a ring of substantially uniform thickness but continuously concaved, at one of the inner and outer surfaces, to define the raceway contour. The deformation is to an extent producing a concave surface of depth exceeding the desired ultimate raceway depth. The deformed ring is hardened and then embedded in a body molding of plastic or elastomeric material, depending on ultimate-use requirements. Race-finishing, including the step of removing excess insert metal to create the desired raceway depth, can proceed before or after molding.

3,693,227

FIXTURE FOR MOUNTING TAPE GUIDES WITH RESPECT TO HELICAL SCANNING ASSEMBLY

Alexander R. Maxey, Newark, Calif., assignor to Ecko Science Corporation

Division of Ser. No. 738,250, June 19, 1968, Pat. No. 3,516,146. This application March 19, 1970, Ser. No. 24,973
Int. Cl. B23p *19/00*
U.S. Cl. 29—200.P 10 Claims



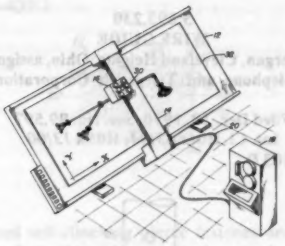
A fixture for mounting tape guides so that tape is a video recorder will pass the scanner of a drum assembly at the proper angle and height. A bracket, which has elongated reference ways to align the placement of the drum assembly thereon is connected to the fixture with the reference way surfaces of the bracket abutting a cylindrical reference surface of the fixture and a reference plate on top of the fixture. This fixes the bracket references in a known preselected position relative to guide positioning jigs on the fixture. The guide positioning jigs are used to mount the guides on the bracket in the desired relationship to the bracket reference surfaces, precise alignment of the guides being permitted by movement of the guide pins in oversize bores before applying adhesive. The bracket is then separated from the fixture.

3,693,228

MACHINE FOR ASSEMBLING WIRE HARNESS

David J. Logan, Glastonbury, Conn., assignor to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed Nov. 12, 1970, Ser. No. 88,922
Int. Cl. H01r *43/00*; H05k *13/04*
U.S. Cl. 29—203 MW 7 Claims



A system is disclosed for the automated assembly of a wire harness from one or more spools of premarked wire. The spools of wire are mounted on a cross-head which is movable in the Y direction on a carriage, movable in the X direction above a surface. A jig board is placed on this surface, and has wire holding devices at preselected locations for receiving the wire. Means is provided for feeding the wire downwardly through a funnel in the cross-head as the head is moved in response to a predetermined program from one point to another on the "plotting" surface. The head includes a tool for inserting the wire into wire retaining slots in the wire holding devices, and a cut-off knife is provided for severing the wire once a particular length has been layed-up.

3,693,229

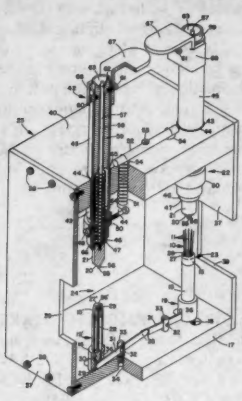
CANNED TRANSISTOR-IC LEAD BENDER

Donald H. Daebler, Cedar Rapids, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed Dec. 16, 1970, Ser. No. 98,529
Int. Cl. H01r *43/00*
U.S. Cl. 29—203 B 17 Claims

A lead bending tool for uniform tight forming of leads about a canned circuit can for upside down mounting of the canned circuit on a planar circuit board. The tool includes a canned circuit holding die member and a relatively moveable tool lead bending assembly with a conical surfaced member for engaging and radially deflecting leads, and a cylindrical die wire bending member that receives the conical surfaced member in

a telescoping action during lead bending and that with continued lead bending movement moves into radially aligned

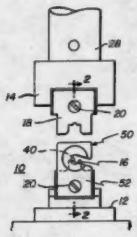


overlap about a die annular rim of the canned circuit holding die member in completing a lead bend forming stroke.

3,693,230
WIRE GUIDE

Thomas E. Morgan, Cleveland Heights, Ohio, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 18, 1970, Ser. No. 99,597
Int. Cl. H01r *43/04*; H05k *13/00*
U.S. Cl. 29—203 D **7 Claims**



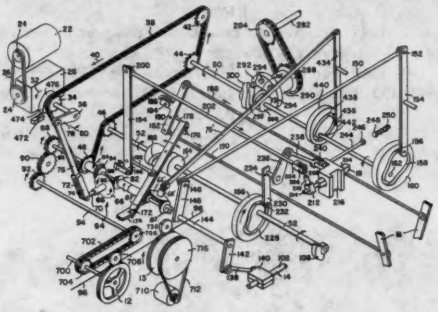
A wire guide for facilitating the entry of a wire end into a funnel ferrule terminal prior to crimping of the terminal onto the wire. The guide is alignable with the crimping device to allow the manual insertion of the wire through the guide into the ferrule. The guide has a slot generally horizontal and inclined from an enlarged entry area upwardly to an area alignable with the ferrule opening to facilitate the wire insertion and to permit the removal of the crimped assembly.

3,693,231
DOUBLE END TERMINAL ATTACHMENT DEVICE

Herbert D. Scharf, 437 Merwyn Road, Merion, Pa.

Filed April 5, 1971, Ser. No. 131,310
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 D **9 Claims**

A double end terminal attachment machine constituting an improvement over one of the devices disclosed and claimed in U. S. Pat. No. 3,267,556 wherein there is a feed wheel having its own separate torque motor. Wire is propelled about the feed wheel to the clutch wheel and the wire is then propelled about the clutch wheel and downstream toward the terminal affixing components of the machine. The variable drive of the feed wheel is achieved through the provision of two trunnions which act individually and together to slow down the action of the feed wheel, stop the feed wheel, allow it to move somewhat forwardly, then reverse it for a very short period and start the feed wheel moving again to propel wire forwardly to the clutch wheel which operates at a constant speed except that it is shut off from the time the forward motion of the feed wheel stops until the time as the reversing action of the feed wheel has been completed. The foregoing action produces a

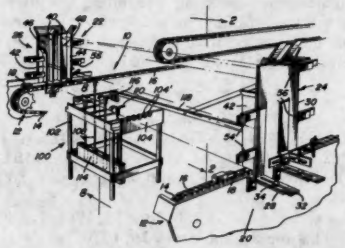


sufficient delay in the operation of the feed wheel so that the terminal affixing mechanism of U.S. Pat. No. 3,267,556 can become operative and complete its function. By virtue of the interposition of the second trunnion the wire is gripped when it is stationary, and this gives rise to an improvement in accuracy and achieving a more precise length of cut, stripped and terminated wire.

3,693,232
APPARATUS FOR ASSEMBLING ELONGATED COMPONENTS IN SIDE-BY-SIDE RELATION

Alex W. Mingus, P.O. Box 291, Hines, Oreg.

Filed Dec. 15, 1970, Ser. No. 98,401
Int. Cl. B23q *7/10*; B23p *19/00*
U.S. Cl. 29—211 R **13 Claims**



A conveyor for engaging and stripping components from successive bottom discharge vertical magazines or feed hoppers spaced longitudinally along the conveyor by engaging the bottom component of the first magazine, conveying the first engaged component toward assembled engagement with the bottom component of the second magazine and displacing the assembled first and second components toward the discharge end of the conveyor assembly.

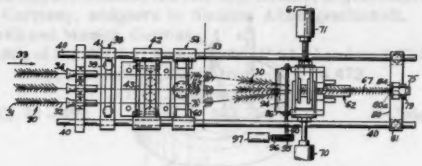
3,693,233
MACHINE FOR CLIPPING AND BENDING THE TWIGS AND LIMB OF ARTIFICIAL TREE BRANCHES

Stephen D. Kent, Newburgh, N.Y., assignor to R. O. Kent Corp., Newburgh, N.Y.

Filed April 23, 1971, Ser. No. 136,770
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 D **10 Claims**

One or more twig garlands are fed, cut and assembled to one end portion of a limb garland. The other end portion of

the limb garland is bent by the machine at a suitable angle for entrance into an inclined hole in a tree trunk. The twig garlands are also bent by the machine smoothly, curvilineally and progresively throughout the lengths thereof after being cut and clipped to the limb garland.



3,693,234

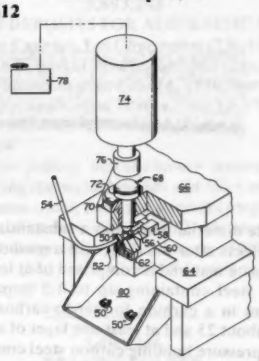
Patent Not Issued For This Number

3,693,235

SPLIT RETAINER FOR CHECK VALVE SPRINGS

Calvin D. Loyd, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 4, 1970, Ser. No. 69,746
Int. Cl. B23p *17/00*
U.S. Cl. 29—412 **3 Claims**



An original retainer is precisely fabricated from a single piece of material of selected properties. The original retainer is then substantially evenly fractured into complementary parts to define a split retainer, by subjecting it to a sharp blow applied as by means of a hammer and anvil. The resulting split retainer parts are then re-assembled about a check valve stem of, for example, a capsule valve, etc., and are secured in place by a locking washer disposed thereabout. Since the complementary parts are halves of an original retainer, the resulting confronting surfaces formed during the fracturing process, as well as the axial dimensions of shoulders, etc., are perfectly matched to provide thereby a precisely dimensioned retainer upon assembly.

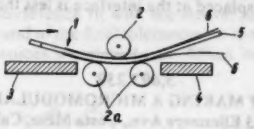
3,693,236

METHOD OF DETACHING GALVANICALLY PRODUCED SHEETS FROM MASTER SHEETS

Gerhard Kapell, Warlimontweg 22, and Schummer, Anton, Packersweide 40, both of Hamburg 28, Germany

Continuation of Ser. No. 635,547, May 2, 1967, abandoned. This application May 5, 1970, Ser. No. 33,158
Claims priority, application Germany, May 12, 1966, N 28517
Int. Cl. B23p *17/00*
U.S. Cl. 29—423 **3 Claims**

This specification describes the mechanical separation of galvanically-formed metal sheets from a master by subjecting a composite, consisting of a master sheet and a formed sheet on each side of said master, to the action of multiple rolls disposed in non-aligned relation on both sides of said composite so as to cause said composite to bend in at least one direction without any substantial decrease in the cross-section thereof. This controlled bending causes the formed sheets to readily separate from the master sheet without manual mechanical manipulation. It is stated that slight elastic deformation of the master upon bending is sometimes desirable.

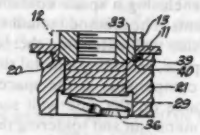


3,693,237

METHOD OF SECURING FASTENERS TO SHEET MATERIAL

William L. Grube, Lake Bluff, Ill., assignor to MacLean-Fogg Lock Nut Co., Mundelein, Ill.

Filed Feb. 20, 1970, Ser. No. 13,007
Int. Cl. B23p *11/00*
U.S. Cl. 29—432.2 **7 Claims**



A combined self-clinching pierce fastener and panel, and the method of attaching the nut to the panel are disclosed wherein by a single stroke a threaded fastener, such as a nut, acts as a punch and pierces its own hole in the sheet metal panel to which it is to be fastened. The nut has one or more laterally extending flanges which abut upon one side of the said panel, the corners of the nut being displaced laterally in the die associated with the piercing operation, preferably under the flange, to clinch the material therebetween. The panel is also displaced at the displaced region of the nut and in the same general direction as the displaced region of the nut. The method is not dependent upon any particular thickness, hardness or ductility of the material of the panel, nor does the nut need to have any predetermined hardness. The displaced material of the nut and panel is compressed together to form, in effect, a cold weld, but it is not confined laterally, thereby avoiding binding of the displaced material in the back-up die used to displace the material.

3,693,238

FRICTION WELDING OF ALUMINUM AND FERROUS WORKPIECES

Fred R. Hoch, and James W. McIntee, both of Lower Burrell, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 52,087, July 2, 1970, abandoned. This application Oct. 2, 1970, Ser. No. 90,191
Int. Cl. B23k *27/00*
U.S. Cl. 29—470.3 **2 Claims**

A method of joining together an aluminum workpiece and a ferrous workpiece by relative rotation of the workpieces while the workpieces are forced together at mutually engaging parallel, planar surfaces. The surfaces are thereby frictionally heated, and sufficient axial pressure is applied to the workpieces to pressure weld them together at the interface of the planar surfaces using an amount of rotational, kinetic energy

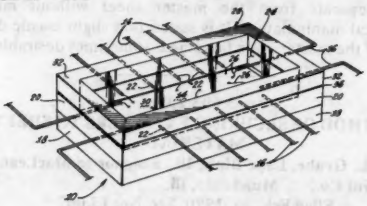
input to the weld area in the range of about 3,500 to 5,500 pounds per square inch of weld area. The compressive yield strength of the aluminum alloy workpiece at the temperature to which the planar surfaces are heated by the rotational energy is such that the amount of metal of the aluminum workpiece radially displaced at the interface is less than 10 percent of the weld area.

3,693,239

METHOD OF MAKING A MICROMODULAR PACKAGE

Sidney Dix, 2863 Ellesmere Ave., Costa Mesa, Calif.

Division of Ser. No. 712,875, Nov. 28, 1967, Pat. No. 3,468,523. This application July 25, 1969, Ser. No. 870,195
Int. Cl. B23k
U.S. Cl. 29—470 **5 Claims**



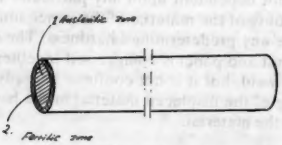
Disclosed is a method of making micromodular packages having a housing enclosing a space containing a plurality of electrical components. The method includes the steps of forming a base with a side wall extending therearound to at least partially define a space, providing a metal rim on the side wall, placing electrical components in the space, placing a cover having a metal frame on the side wall such that the metal frame rests on the metal rim and soldering the frame to the rim while maintaining the temperature of the electrical components below a predetermined level.

3,693,240

METHOD OF MANUFACTURING FILLER MATERIAL FOR WELDING

Lars Olov Lennart Jansson, and Lars Gosta Ljungstrom, both of Sandviken, Sweden, assignors to Sandvikens Jernverks Aktiebolag, Sandviken, Sweden

Filed Aug. 24, 1970, Ser. No. 66,417
Claims priority, application Sweden, Aug. 27, 1969, 11853
Int. Cl. B21d *39/04*
U.S. Cl. 29—474.3 **9 Claims**



Hot working a welding rod or strip to form a composite body consisting of a tubular case or sheath of one material surrounding a core of a different material. One of the two materials is ferritic metal whilst the other of the two materials is austenitic metal. The resulting weld consists essentially of a stainless steel.

3,693,241

MANUFACTURE OF FOIL SEALS

Elmer G. Fridrich, 9933 Wilson Mills, Chardon, Ohio

Division of Ser. No. 734,910, June 6, 1968, Pat. No. 3,582,704. This application Aug. 27, 1970, Ser. No. 76,339
Int. Cl. B23k *31/02*
U.S. Cl. 29—475 **8 Claims**

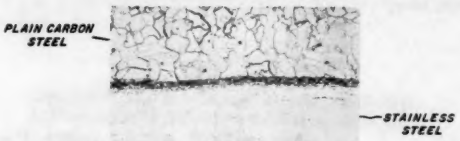
Molybdenum foils for pinch sealing into quartz are etched using shields which protect selected welding areas at each end from the action of the electrolyte. Etching provides feathered edges all around but leaves thicker areas under the shields to which the inleads and electrodes are welded without any need for extra tabs to facilitate welding or to increase the current carrying capacity. In a preferred foil-inlead construction, the inlead and electrode have spade ends coextensive with the thicker areas in the foils to which they are welded.

3,693,242

COMPOSITE MATERIAL AND PRODUCTION THEREOF

Joseph A. Chivinsky, Sarver, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Jan. 2, 1970, Ser. No. 177
Int. Cl. B23k *31/02*
U.S. Cl. 29—480 **8 Claims**



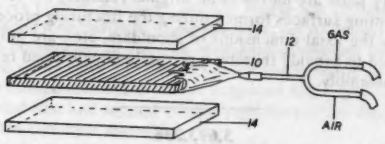
A composite material which has a substantially reduced incidence of defects after drawing, and a method of producing it. The composite material is comprised of at least one layer of plain carbon steel containing up to 1.5 percent of carbide former present in a carbide former-to-carbon ratio of form about 1.5 to about 25 and at least one layer of stainless steel. It is formed by pressure bonding carbon steel containing carbide former to stainless steel.

3,693,243

METHOD AND APPARATUS FOR CLADDING METALS

James Q. Steigelman, Detroit, Mich., assignor to W. M. Chace Company

Filed April 20, 1970, Ser. No. 29,962
Int. Cl. B23k *31/02*
U.S. Cl. 29—487 **11 Claims**



A layer of a metal or alloy is clad to at least one surface of a substrate of another metal or alloy. The cladding process is carried out at elevated temperatures in order to produce a metallurgical bond at the interface between the layer and substrate. Normally, a substantial portion of the layer liquifies at these temperatures; however, the layer is cooled in a region remote from the interface during the cladding process to confine the liquification to the immediate region about the interface.

3,693,244

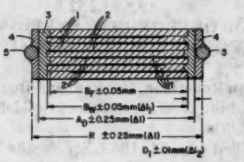
FRONT CONTACTED ELECTRICAL COMPONENT

Reinhard Behn, Munich; Heinrich Gottlob, Regensburg; Gerhard Hoyler, Munich, and Hartmut Kessler, Regensburg, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Division of Ser. No. 841,860, July 15, 1962, abandoned. This application Sept. 22, 1970, Ser. No. 74,473

Int. Cl. B23k *31/02*

U.S. Cl. 29—492 4 Claims



A pile or layer condensor is provided with external connecting wires on its two frontal sides by pressing the connecting wires into an outer metallic layer which has a lower melting point than an inner metallic layer which contacts the plates of the condensor. The connecting wires are thereby embraced by the outer layer and adhere to the inner layer.

3,693,245

WELDED DEPOSITS FOR AUSTENITIC STEELS

Jean-Jacques de Cadenet, Les Charmettes (73), Ugine, France

Continuation-in-part of Ser. No. 608,971, Jan. 13, 1967, abandoned. This application Feb. 24, 1970, Ser. No. 13,757

Claims priority, application France, Jan. 13, 1966, 6645725

Int. Cl. B23k *31/02, 35/24*

U.S. Cl. 29—504 1 Claim

Weld deposits joining nickel-chrome austenitic steels, a method of making the weld deposits and filler metals yielding such weld deposits which have the general composition in per cent by weight of carbon 0.06 to 0.12, chromium 15 to 20, nickel 7.5 to 13, tungsten 3.5 to 5, manganese 0.5 to 2, silicon 0.6 and nitrogen (N_2) 0.10, and a ferritic tendency index of less than or equal to 15.

3,693,246

BRAZING SOLDER

Vladimir Vasilievich Novikov, ulitsa Kachalinskaya, 9, kv. 72; Alexandr Ivanovich Gubin, B. Naberezhnaya ulitsa, 25/1 kv. 111, and Vasily Mikhailovich Sorokin, Spartakovskaya ulitsa, 20, kv. 66, all of Moscow, U.S.S.R.

Filed Nov. 17, 1970, Ser. No. 90,452

Int. Cl. B23k *31/02*

U.S. Cl. 29—504 5 Claims

The invention relates to brazing solders applied for brazing parts made of steel, cast iron, copper and nickel alloys, as well as of noble metals and alloys having their melting point lying above 800° C.

The invention is characterized in that the brazing solder proposed therein, has the following weight percent composition: Cu, 20–65; Mn, 15–35, Ag, 15–25; and Ni, 5–20; Zn, 0–15.

3,693,247

METHOD OF SECURING TOGETHER A PLURALITY OF STRUCTURAL MEMBERS

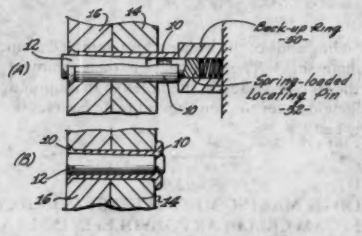
Clarence K. Brown, 6219 East 6th St., Long Beach, Calif.

Continuation-in-part of Ser. No. 764,811, Oct. 3, 1968, abandoned. This application Feb. 2, 1970, Ser. No. 7,617

Int. Cl. B21d *39/00*; B23p *11/00*

U.S. Cl. 29—512 2 Claims

The invention is concerned with fasteners which are used to secure a plurality of plates, or other structural members, together in an interference fit between the fastener and the plates to impart a residual hoop stress within the structural members and around the hole through which the fastener extends so as to obviate fatigue failure in the structural members in the vicinity of the hole. The fastener assembly of the invention comprises the combination of a flared sleeve of relatively soft material, and a tapered mandrel of relatively hard material. The mandrel is first driven into the sleeve at the factory in a preliminary interference fit with the sleeve, and the sleeve is then finish ground to the final tolerances, so that each mandrel and sleeve becomes a matched pair. When inserted into the



hole in the structural members to be joined thereby, the mandrel is then driven further into the sleeve causing the sleeve to expand radially outwardly to assume a final diameter greater than the original diameter of the hole. In this way the fastener assembly imparts a residual tension stress into the portions of the structural members surrounding the hole; this being achieved without burnishing or galling the bore of the hole due to the fact that the expansion of the sleeve is purely in the radial direction and there is no axial movement thereof.

3,693,248

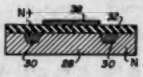
SURFACE INVERSION PROTECTION METHOD AND APPARATUS

Jared F. Ferrell, 109 Belhaven Drive, Los Gatos, Calif.

Division of Ser. No. 772,191, Oct. 31, 1968, Pat. No. 3,519,897. This application April 6, 1970, Ser. No. 31,061

Int. Cl. B01j *17/00*; H01g *9/00*

U.S. Cl. 29—570 3 Claims



A novel metal-insulator-semiconductor capacitor device and method of manufacture wherein means are provided for narrowly defining the boundaries of the inversion region lying beneath the metallic electrode disposed on the surface of the semiconductive chip. An impurity region highly doped with an appropriate dopant is provided around the intentional inversion region for delimiting the area thereof as well as prohibiting an unintentional expansion of this area due to spurious inversion of the substrate surface caused by accumulation of surface charge on the overlying dielectric.

3,693,249

METHOD FOR ASSEMBLING REFRACTORY METAL RODS IN A HEATING SYSTEM SHOWING NO OVERHEATED SECTIONS

Maxime Monne, Paris, France, assignor to Sedimmec Societe d'Exploitation d'Inventions Metallurgiques Mechaniques et Chimiques, Paris, France

Filed Nov. 16, 1970, Ser. No. 89,990

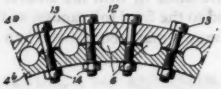
Claims priority, application France, Nov. 14, 1969, 6939328

Int. Cl. H05b *3/00*

U.S. Cl. 29—611 2 Claims

A method of producing heating systems constituted by parallel rods of a refractory metal such as tungsten, tantalum or molybdenum, fitted at least at one end between cooperating connecting elements also of a refractory metal, to prevent

the formation of overheated sections, ascribable to a faulty contact between the ends of the rods and the connecting elements. Between the assembled cooperating connecting elements is inserted a thin sheet of material such as copper or the like foil and is formed with the holes which are to receive the



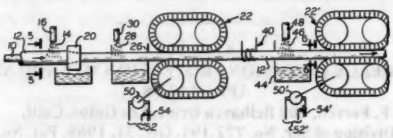
corresponding ends of the rods in the assembled elements and intermediate sheet. The thin sheet is then removed and the ends of the rods are fitted in the holes so that upon tightening of the elements over the rods, an intimate contact is obtained therebetween.

3,693,250

METHOD OF MAKING METALLIC SHEATHED CABLES WITH FOAM CELLULAR POLYOLEFIN INSULATION AND METHOD OF MAKING

William J. Brorein, 17 Longview Drive, Whippany, and Fred F. Polizzano, 520 Brookside Ave., Allendale, both of N.J.

Division of Ser. No. 733,528, May 31, 1968, Pat. No. 3,567,846. This application July 20, 1970, Ser. No. 56,325
Int. Cl. H01b *13/00*
U.S. Cl. 29—624 14 Claims



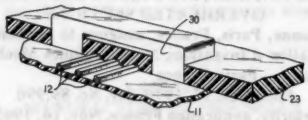
This specification discloses a method of making a metallic sheathed electrical cable having foamed cellular polyolefin dielectric insulation which is fusion-bonded to the inside of an annealed sheath to obtain better electrical and mechanical characteristics. The sheath is applied to a foam-insulated core and then sunk down by drawing through a die or reducing rolls to make the tube fit the insulated core snugly. Controlled heating of the sheathing melts the part of the insulation, or adhesive material, when used, which is in contact with the sheath to produce the fusion bond. The heating period is short and is followed by a quench. This controlled heating and cooling is also used to anneal the metallic sheath.

3,693,251

METHOD OF FORMING CLOSELY SPACED CONDUCTIVE LAYERS

Ralph James Jaccodine, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Dec. 3, 1970, Ser. No. 94,679
Int. Cl. B41M *3/08*
U.S. Cl. 29—625 2 Claims



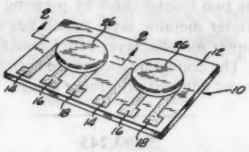
An air isolated crossover is fabricated on an integrated or thin film circuit by first forming on the device surface, along with the conductive metal pattern, metal base pads for the crossover members. The horizontal beam members of each crossover then are formed in the required pattern on a copper foil carrier. Holes are etched through the copper foil at the ends of each beam member and in register with the base pads on the device surface. A resin pattern is formed on the underside of the copper foil for spacing and protective purposes and the preform assembly then is placed, resin side down, on the device surface. A metal plating step then completes the crossover structure by building by the base pads to connect to the ends of the beam members. Finally, the copper foil is dissolved leaving the gold crossover member.

3,693,252

METHOD OF PROVIDING ENVIRONMENTAL PROTECTION FOR ELECTRICAL CIRCUIT ASSEMBLIES

Mark Christian Robertson, Grafton, and Donald Lloyd Bishop, Shorewood, both of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Aug. 21, 1969, Ser. No. 862,582
Int. Cl. H05k *3/28*
U.S. Cl. 29—627 11 Claims



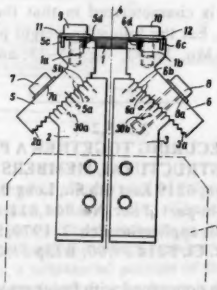
The application of environmental protection for discrete electrical components mounted on a circuit substrate is precisely controlled by first forming a thermosetting material, such as a bisphenol epoxy resin, into a body having a cavity sufficient to accommodate the electrical component, preferably by mechanical compaction of the material in powder form, placing the preformed body in the inverted position over the circuit element, and then heating the assembly to cure the thermosetting material to at least a semi-hardened state. In one embodiment, a second thermosetting material, having a coefficient of thermal expansion closely approximating that used for the preformed body in order to minimize internal stresses during thermal cycling of the completed assembly, is used as a protective overcoating.

3,693,253

CUTTING APPARATUS AND CUTTING HEAD THEREFOR

Georg Jager, Gerlinden near Munich; Helmut Wenger, Allershausen, and Karl Zangl, Munich, all of Germany, assignors to Zongl G.m.b.H., Frohschammerstr., Germany

Filed Sept. 3, 1969, Ser. No. 855,158
Claims priority, application Germany, Sept. 3, 1968, P 17 79 616.6
Int. Cl. B26f *3/08*
U.S. Cl. 30—140 5 Claims



A cutting head for a cutting apparatus with a transformer for heating the cutting blade has a pair of mutually insulated

contact members each carrying a contact bridge, the contact bridges extending at about 45° to the longitudinal central axis of the apparatus. When the blade is mounted in place, it short-circuits the secondary of the transformer and is heated rapidly.

3,693,254

MOTORIZED SHEARING IMPLEMENT

Albert R. Salonen, 560 Baxter Avenue, Victoria, British Columbia, Canada

Filed Feb. 5, 1971, Ser. No. 112,926
Claims priority, application Canada, Aug. 26, 1970, 091570
Int. Cl. B26b *15/00*
U.S. Cl. 30—228 **17 Claims**

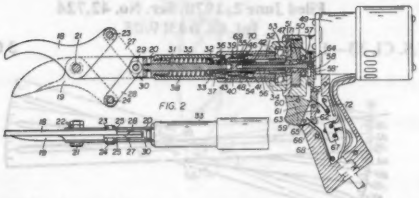


FIG. 2

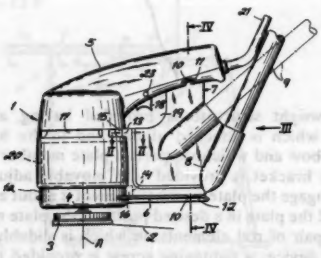
This invention relates to a portable, hand-held shearing implement, which includes a pair of cutting blades employing a motor powered mechanism to apply the cutting force. The invention is particularly adaptable for an implement to execute individual, deliberate, cutting strokes. One version may be powered by an electric motor or a self-contained internal combustion engine, driving through a gear reduction train to a reciprocatory mechanism having threaded means with a releasable coupling to drive the power stroke. Another version employs a controllable reversing switch to effect the reciprocative action and is limited to an electric motor drive. In the former version, reopening of the blades is spring actuated with provision included to soften the impact of termination, and includes a triggering means to stop and hold the reciprocative action after each cycle until released by trigger actuation.

3,693,255

LAWN EDGE TRIMMER

Julius Langenstein, Max-Eyth-Str. 4, 7918 Illertissen, Germany

Filed March 8, 1971, Ser. No. 122,111
Claims priority, application Germany, Nov. 26, 1970, G 70 43 648.5
Int. Cl. B26b *27/00*
U.S. Cl. 30—276 **9 Claims**



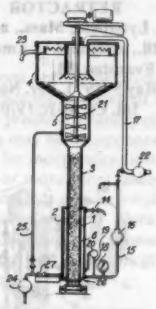
A lawn edge trimmer has a motor housing with a cutting element rotatably mounted at one end and a grip extending laterally from the other end. A shield is provided adjacent the cutting element. A handle-mounting member is provided between the grip and the shield, engaging in holes into the grip and shield by means of tabs and embracing lugs on the motor housing with claws so that it is securely anchored on the housing. This member is formed with at least two sockets which are inclined to each other and are both adapted to receive the end of an elongated handle to allow different settings of the handle angle. Simple elastic deformation of the shield allows removal of the handle-mounting member.

3,693,256

PROCESS AND APPARATUS FOR CONTINUOUSLY SEPARATING AND WASHING A COAGULUM AND MORE PARTICULARLY CURD FOR MAKING CHEESE AND CASEIN

Jean-Louis Fernand Joux, Epinay; Bernard Michel Mignot, Les Rottes, Vendome, both of France, and Michel Gaston Albert Billon, Kavaklidere - Ankara, Turkey, assignors to Fromageries Bel-La Vache Qui Rit, Paris (Seine), France

Filed July 22, 1970, Ser. No. 57,212
Int. Cl. A01j *25/00, 25/11*
U.S. Cl. 31—46 **10 Claims**



Apparatus for continuously processing a coagulated raw milk product comprising a constant-level mixture separating chamber and at least one means for compressing the curd in the whey. The means for discharging the whey from the curd compressing means communicate with a point on the apparatus located upstream of the curd compressing means, the whey discharge means have connected thereinto a pressure-gauge and an adjustable-output pump, a smooth tube is positioned upstream of each curd compressing means, and the curd compressing means is a perforated tube the perforations of which are slots parallel to its axis. This apparatus can be applied with advantage to the production of cheesemaking curds.

3,693,257

METHOD AND ELEMENT TO DETERMINE THE CORRECT DEPTH OF THE LINGUAL RIM OF A BITE PLATE DURING THE CONSTRUCTION OF A DENTURE FOR A TOOTHLESS MANDIBLE, OR TO CHECK THE CORRECTNESS OF THE DEPTH OF THE LINGUAL RIM OF A LOWER DENTURE

Josephus Schreinemakers, Wilhelminastraat 43, Sittard, Netherlands

Filed Jan. 30, 1970, Ser. No. 7,103
Claims priority, application Netherlands, Feb. 2, 1969, 6901664
Int. Cl. A61c *9/00*
U.S. Cl. 32—19 **9 Claims**

A method to determine the correct depth of the lingual rim of a bite plate during the construction of a denture for a

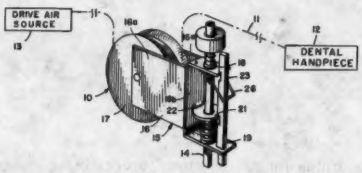
toothless mandible, or to check the correctness of the depth of the lingual rim of a lower denture. According to the invention the distance is measured between the occlusal surface of the wax rim or the bite plate on the level of the incisal edges of the teeth of the lower denture, on the one side, and the highest point of the inner surface of the bite plate or of the lower denture, which covers in situ the anterior part of the jaw ridge of the mandible, on the other side, whereafter a plate-shaped registering element with a height substantially equal to said distance is positioned vertically on the anterior part of said jaw ridge and the extension rate of the tongue is measured and compared with its extension rate after the bite plate or the lower denture has been positioned in situ. This plate-shaped registering element comprises a flat lower supporting face and an upper face in parallel therewith, said element being bent about an axis which extends perpendicularly to said faces in the median plane of the registering element.

3,693,258

INERTIA RELEASE FOR DENTAL HANDPIECE HOSE RETRACTOR

Bertram A. Fulton, Lynnfield, Mass., and Richard A. Slouka, Carpentersville, Ill., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed May 5, 1971, Ser. No. 140,534
Int. Cl. A61c *19/02*
U.S. Cl. 32—22 **8 Claims**



A retractor for the hose of a dental handpiece, the retractor being equipped with a spring-supported weight for tripping the release mechanism of the retractor when the hose is pulled abruptly.

3,693,259

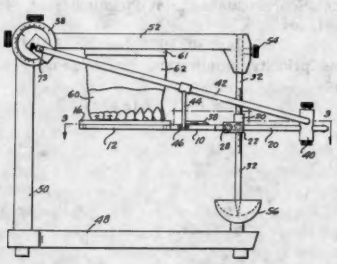
Patent Not Issued For This Number

3,693,260

MULTIPURPOSE ADJUSTABLE OCCLUSAL FORK

Snowden Hernandez, c/o Medical Science Campus, San Juan, P.R.

Continuation-in-part of Ser. No. 712,215, March 11, 1968, abandoned.
This application May 22, 1970, Ser. No. 39,765
Int. Cl. A61c *11/00*
U.S. Cl. 32—32 **9 Claims**



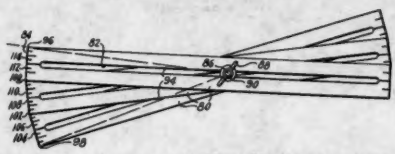
A horizontal bite plate support combined with a dental articulator which has a calibrated vertical post member and which has a connection to support a face bow in a position to establish the location of a patient's transverse mandible hinge axis. The bite plate support has a calibrated elongated handle portion with a slide member on the handle portion slidably receiving and being clampingly engageable with the handle portion and also slidably receiving the vertical post member and being clampingly engageable therewith. The horizontal bite plate support has an inner plate member recessed to interlock with a smooth bite plate, whereby the bite plate can be positively supported in a horizontal position corresponding to the location of a patient's occlusal area relative to his transverse mandible hinge axis.

3,693,261

ANGLE TRISECTOR

William M. Moore, 1578 Scotty St., San Jose, Calif.

Filed June 2, 1970, Ser. No. 42,724
Int. Cl. B43l *9/08*
U.S. Cl. 33—1 AP **3 Claims**



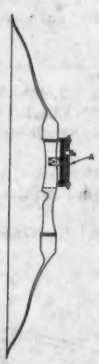
Transparent plastic T-square, dual blade, and protractor devices for performing geometrical and trigonometrical measurements with particular emphasis on trisecting angles and dividing angles into a plurality of equal segments.

3,693,262

BOWSIGHT

Brian Wood, 414 E. Harry St., Hazel Park, Mich.

Filed March 20, 1970, Ser. No. 21,353
Int. Cl. F41g *1/00*; F41b *5/00*
U.S. Cl. 33—265 **8 Claims**



A bowsight structure is provided having an L-shaped bracket which is attached at one end to the handle of an archery bow and which supports a plate member on its other end; the bracket is provided with movable adjusting means which engage the plate member to pivot it about a fulcrum pin and hold the plate in a desired position; the plate member supports a pair of rod elements on which is slidably mounted a sighting device; a tightening screw is provided to retain the sighting device in a preselected position on the rod elements.

3,693,263

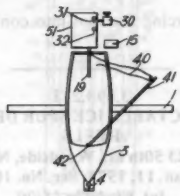
Patent Not Issued For This Number

3,693,264

SIMULATING APPARATUS FOR TEACHING THE ART OF SAILING

Rogor Strange Waddington, deceased, late of Lausanne, Switzerland; by David Buckley Sharp, executor; Joan Rubinstein, executrix, both of London, England, and Bruce Duval, Lausanne, Switzerland, assignors to T.P.I. Limited, Nassau, Bahamas

Division of Ser. No. 840,611, July 8, 1969, Pat. No. 3,597,856, which is a continuation-in-part of Ser. No. 775,559, Nov. 13, 1968, Pat. No. 3,471,943. This application May 17, 1971, Ser. No. 143,988
Int. Cl. G09b 9/06
U.S. Cl. 35—11 8 Claims



Sensitivity control means are provided for modifying the response of a sailing simulator to its helm to take into account the supposed wind force. Allowance is preferably made for the supposed wind direction and the boom setting.

The effect of the inertia of a craft upon steering may be represented by a capacitor and a thermistor. The effect of heeling upon helm sensitivity may be reproduced by transducers in the system. To demonstrate the effect of a center board on steering a transducer representing wind direction may be switched into or out of circuit.

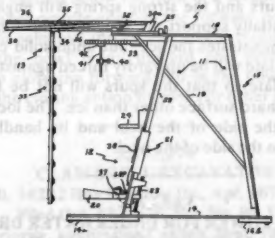
Conveniently a wind force signal is provided as the output potential of a variable transformer and this potential is adjusted by the difference between the output potentials of two variable transformers, representing respectively wind direction and boom position relative to the wind, to provide an output which controls a reversible and stoppable variable-speed turning motor.

3,693,265

PILOT ARMREACH AND COCKPIT CONTROL LOCATOR MACHINE

Milton Alexander, Fairborn; John W. Garrett, Bellbrook, and Ralph R. Riepenhoff, Dayton, all of Ohio, assignors to The United States of America as represented by the Secretary of the United States Air Force

Filed July 7, 1971, Ser. No. 161,361
Int. Cl. G09b 9/08
U.S. Cl. 35—12 F 9 Claims



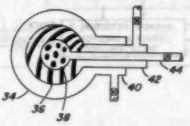
Test apparatus for determining the capability of a pilot, while suited, helmeted and restrained in an aircraft cockpit seat, to reach, grasp and manipulate a control knob located at various angular distances and knob heights above floor level. The apparatus consists basically in a seat and support therefor, a deck simulating the floor of the aircraft cockpit, and a knob-mounted vertical member having a series of vertically-aligned knobs located at preselected heights, and being quickly adjusted to preselected angular positions.

3,693,266

EDUCATIONAL TOY BALLOON SYSTEMS

Jerome Pressman, 4 Fessendon Way, Lexington, Mass.

Filed June 30, 1971, Ser. No. 158,380
Int. Cl. G09b 23/12
U.S. Cl. 35—19 R 8 Claims



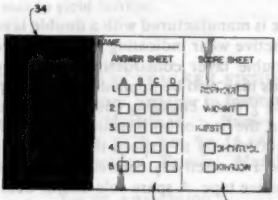
Two or more balloons are cooperatively related by interconnection and/or by nesting in different combinations utilizing valves and tubes to produce a variety of effects by selective inflation. The balloons may be interconnected by tubes with a valve for each balloon for independent inflation or deflation in conjunction with one or more other balloons in various configurations. Valved manifolds may be employed for selectively inflating and/or interconnecting a plurality of balloons to demonstrate the hydrodynamics of pressure and the properties of elastic materials as well as to train children in manipulation and logical thinking.

3,693,267

ANSWER AND SCORING SHEET

John C. Bertolet, 918 Great Plain Avenue, Needham, Mass.

Filed May 5, 1970, Ser. No. 34,837
Int. Cl. G09b 3/06
U.S. Cl. 35—48 A 6 Claims



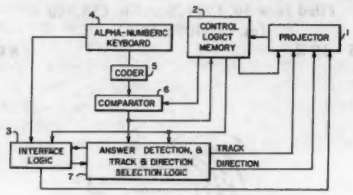
A self-correction answer and scoring sheet for use in multiple choice testing. The sheet is imprinted on the same surface both with a panel of groups of response boxes to be marked by the person tested and a scoring panel having scoring boxes which correspond to the correct or preferred answer for each group of response boxes. The sheet is folded so that the scoring panel underlies the response panel with each of the scoring boxes being in registry with a selected response box in each group, the selected response box corresponding to the correct or desired answer. Means are provided for forming a visible mark on the score sheet in response to impression of an answer on the response panel. A correct response is indicated by the formation of the visible mark within the score box. An incorrect answer is indicated by the formation of the visible mark outside of the score box.

3,693,268

DUAL ANSWER MODE TEACHING SYSTEM

Francis T. Thompson, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 13, 1970, Ser. No. 80,360
Int. Cl. G09b
U.S. Cl. 35—48 R **9 Claims**



A teaching system wherein the correctness of a student response is determined on the basis of a commutative or non-commutative mode of operation by storing correct answer information in a manner corresponding to the mode of operation and modifying the correct answer information in accordance with student response when operating in the commutative mode and comparing a correct answer information with the student response when operative in the non-commutative mode so that an indication of the correctness of the student answer is provided in either mode of operation.

3,693,269

SHOE CONSTRUCTION AND REPAIR UNIT THEREFOR

Anthony T. Guarrera, 34-36 80th St., Jackson Heights, N.Y.

Filed Nov. 23, 1970, Ser. No. 92,013
Int. Cl. A43c *13/00*
U.S. Cl. 36—15 **13 Claims**

A new shoe is manufactured with a double layer sole having visually distinctive wear indicating means between the layers. The same double layer construction with integral wear indicating means may also be applied to the heel portion of the new shoe. The ground engaging (outer, i.e., "wera") layer of either the sole, the heel or both sections is peeled off when it is worn down sufficiently to expose the wear indicating means which may be a distinctively colored, double faced pressure-sensitive adhesive tape. A spare sole and/or heel sold with the new shoe is cut to the exact size and shape of the corresponding portion of the original shoe by the shoe manufacturer and is provided with a pressure-sensitive adhesive coating on one surface that is covered by a strippable, protective layer. When the worn down, original outer sole and/or heel is peeled off, it is replaced by the spare.

3,693,270

INTERNAL PADS FOR RUBBER FOOTWEAR

Brian L. Murray, 147-37 38th Avenue, Flushing, N.Y.

Filed Jan. 8, 1971, Ser. No. 104,964
Int. Cl. A13b *23/28*; A43b *23/28*
U.S. Cl. 36—58.5 **2 Claims**

Internal pads of sponge material are preferably enclosed in a fabric casing and secured to the inside surface of rubber boots or shoes. The construction permits the wearer to put his feet into the boots without strenuous effort. Also, the boots may be removed easily without using a zipper opening or shoe laces. While being worn, the wearer may run or take long walking steps without fear of losing the boots or of displacing the foot within the boot. The sponge inserts hold the foot in its

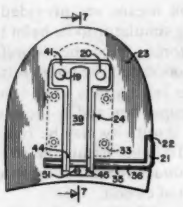
proper place by forcing the foot into contact with the inner sole.

3,693,271

BUILT-IN RETRACTABLE ICE SPUR DEVICE FOR SHOE HEELS

Joseph Korpei, 63-23 50th St., Woodside, N.Y.

Filed Jan. 11, 1971, Ser. No. 105,433
Int. Cl. A43c *15/00*
U.S. Cl. 36—61 **1 Claim**



The shoe heel is formed of an assembly of leather layers, some of the layers being cut-out or hollowed to receive and confine a retractable spur device that is mountable as a unit within the heel layer openings. The bottom heel layer has openings through which two spurs are projected across the rear of the heel of the shoe. The spur device comprises generally a bottom base plate, a retractable spur plate having spurs extending through the base plate and adapted to be extended through the holes in the bottom layer of the heel. Lying above the spur plate is a main pressure spring plate, pivotally connected to one end of the base plate and normally free of spring action. A lock lever having a shank with an opening therein extends over the spring plate and transversely thereto and with the spring plate lying within the opening no spring action is exerted against the spur plate. Upon the lock lever and its shank being turned, pressure is applied to the spring plate so as to activate the same and to extend the spurs. By this construction the spurs and the strong spring will engage the ice and will substantially support the weight of the wearer of the shoe so that it penetrates the ice, but upon solid concrete or rocks the spur plate will be upwardly forced against the action of the spring plate so that the spurs will not be harmed by walking upon a hard surface other than ice. The lock lever extends through the side of the heel and its handle arm lies within a recess in the side of the heel.

3,693,272

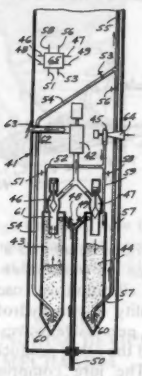
FLOATING TOWER FOR UNDERWATER DREDGING

Paul Gariel, 3, rue Lesdiguieres, 38-Grenoble, France

Filed April 29, 1970, Ser. No. 32,993
Claims priority, application France, April 30, 1969, 6912354; May 13, 1969, 6914340
Int. Cl. E02f *3/90*
U.S. Cl. 37—63 **3 Claims**

A suction-dredging installation for operation at great depths and having considerably increased stability in rough water,

comprising a suction nozzle in contact with the sea-bed and drawing in a mixture of water and materials, a pump installed in a floating tower of elongated form and a suction conduit coupling said suction nozzle to said pump, the tower being maintained in a vertical working position in the water by bal-



lasting means, said pump being mounted near the lower extremity of the tower so as to obtain a great apparent depth of immersion, the pump being coupled to a delivery conduit which applies a back-pressure corresponding substantially to said depth of immersion so that the pump is capable of working without cavitation.

3,693,273

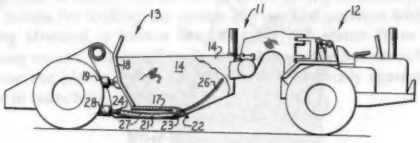
SCRAPER APRON FOR IMPROVED CLOSING IN ROCK

Robert J. Sullivan, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 14, 1970, Ser. No. 97,788

Int. Cl. E02p *5/00*

U.S. Cl. 37—129 **13 Claims**



An apron carried below the floor of a scraper bowl and having the scraper cutting edge on the forward portion thereof is arranged for selective forced movement through the material ahead of the bowl in an upward and preferably forward direction to close the forward end of the bowl without interference to the closing action by rocks or other material.

3,693,274

CLAM SHELL EXCAVATOR

Ugo Piccagli, 14202 Hay Meadow Dr., Apt. 167, Dallas, Tex.

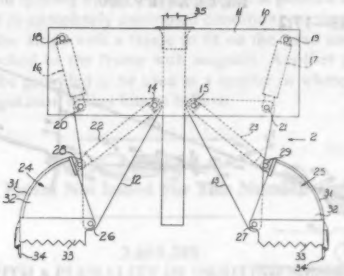
Filed Oct. 13, 1970, Ser. No. 80,357

Claims priority, application Canada, Sept. 10, 1970, 092866

Int. Cl. B66c *3/02*

U.S. Cl. 37—187 **2 Claims**

A supporting frame cars a pair of pivoted arms which are movable toward and away from each other by fluid operators reacting between the arms nd the frame. A pair of complemental bucket members are pivoted to lower end of the respective arms for movement toward and away from each other independently of the pivotal movement of the arms. The bucket members are moved by fluid operators reacting between the arms and the bucket members. A suction pipe ex-



tends through the frame between the arms for picking up material loosened by the bucket members.

3,693,275

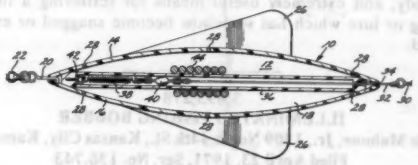
FISHING LURE

Jack Q. Craig, 44 N.W. 101st Ave., Portland, Oreg.

Filed Sept. 30, 1970, Ser. No. 76,699

Int. Cl. A01k *85/00*

U.S. Cl. 43—15 **4 Claims**



A fishing lure for connection to a leader and adapted to trail a fishhook, the lure including a bias means which yields when a fish initially strikes the fishhook, the lure further including a relatively heavy mass to provide inertial resistance to movement so that the fishhook is abruptly and forcibly set when the bias means ceases to yield further.

3,693,276

DEVICE FOR ELECTRIC SEA-FISHING

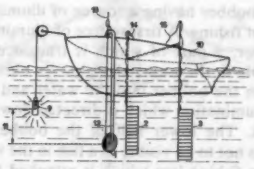
Georges Kurc, Nantes, France, assignor to Institut Scientifique et Technique des Peches, Maritimes, Nantes, France

Filed March 3, 1970, Ser. No. 16,081

Claims priority, application France, March 6, 1969, 6906150

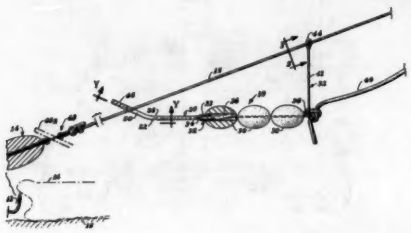
Int. Cl. A01k *79/00*

U.S. Cl. 43—6.5 **15 Claims**



Electric sea-fishing apparatus employing an electrode array for subjecting fish to an electric field of a strength equal to or in excess of the galvanotactic threshold, the electrode structure including an anode and two cathodes arranged to define an equilateral triangle and the power source supplying a pulsating DC voltage.

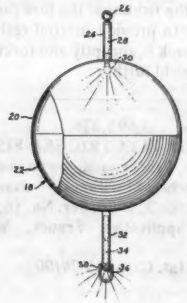
3,693,277
LURE-RETRIEVER
Wallace N. Wells, 7415 Hollingsworth Dr., New Augusta, Ind.
Filed Nov. 10, 1969, Ser. No. 875,056
Int. Cl. A01k 97/00
U.S. Cl. 43—17.2 4 Claims



A fish lure retriever, readily attachable onto an extended fishing line having its lure snagged or caught by some underwater obstruction. The retriever has an opening through which the fishing line extends and also through which a portion of the snagged lure is received, permitting the lure-retrieving force to be applied against those received lure portions. Thus, the fishing line, which guides the retriever to the submerged lure, also automatically directs and guides the retriever to a position in which a portion of the retriever is latched or locked onto a portion of the lure.

The concepts of the present invention provide a convenient, handy, and extremely useful means for retrieving a fishing plug or lure which has somehow become snagged or entangled.

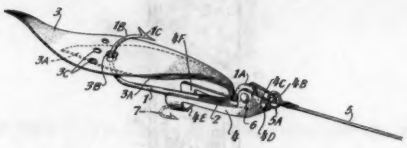
3,693,278
ILLUMINATED FISHING BOBBER
Asie Mahone, Jr., 1309 North 44th St., Kansas City, Kans.
Filed April 23, 1971, Ser. No. 136,743
Int. Cl. A01k 93/00
U.S. Cl. 43—17.5 7 Claims



A fishing bobber having a source of illumination to accommodate night fishing. A first source of illumination is disposed in the bobber, a part of which is translucent, to make the bobber visible in the water at night. An elongated projection extends from the bobber into the water and houses a second source of illumination which is directed downwardly onto the baited hook. The lower half of the bobber is substantially opaque so as not to be visible to a fish in the water beneath the bobber. The fishing line which is attached to the bobber includes a leader section which extends directly beneath the bobber and is secured to the end of the aforementioned projection. The main length of line which is secured to the fishing pole is attached to the bobber by an elongated structure at the top of the bobber, in the same vertical plane as the projection which mounts the leader section.

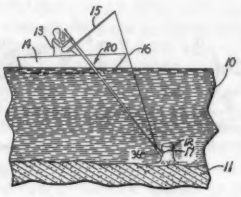
A plurality of flotation balls or fins may be provided around the bobber to help stabilize it in the water.

3,693,279
SOUND PRODUCING FISHING LURE
Kenneth Mackie, 23 Riverside Rd., Alnmouth, England
Filed April 14, 1970, Ser. No. 28,451
Claims priority, application Great Britain, April 18, 1969, 19,840/69
Int. Cl. A01k 85/04
U.S. Cl. 43—42.06 13 Claims



The invention described relates to a fishing lure in which relative motion through the water when fishing promotes two different modes of vibration or oscillation due to the hydrodynamic instability of two hydrofoil elements. One of the modes produces percussive waves in the water in the manner of a rattle and the other produces acoustic waves of a continuous nature. The lure comprises a hook which is pivotally connected at its eye to a striker element and free to rotate about an axis spaced from the end at which the hook line is attached and about which the striker may rotate. The striker presents a rearwardly directed extension against which the shank of the hook may percussively impact and is apertured to provide a water passageway therethrough. Further, at least one flexible laminar element is mounted on the hook so as to be attached to the hook shank near the eye and is impaled near the barb. This latter element which is responsible for undulatory oscillations occasions the acoustic waves.

3,693,280
COMBINED BOAT HOOK AND LURE RETRIEVER
Ray Calhoun, P.O. Box 1336, Taft, Calif.
Filed Nov. 13, 1970, Ser. No. 89,169
Int. Cl. A01k 97/00
U.S. Cl. 43—17.2 3 Claims

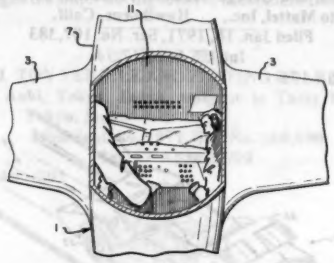


A fish lure retriever having a pole, a fish line following guide mounted on the pole, and hook snagging means mounted on the pole adjacent to the guide.

3,693,281
PEEK IN MODEL KIT
Tobin Wolf, 447 Essex Avenue, Bloomfield, N.J.
Filed Jan. 15, 1971, Ser. No. 106 761
Int. Cl. A63h 33/26
U.S. Cl. 46—228 7 Claims

The disclosure relates to a model kit which consists generally of premolded parts, such as plastic or the like which can be preassembled in well known manner to provide a resulting scale mode of considerable accuracy and detail of the external part of the original structure being copied. The disclosure also includes at least one photo-optical system which is positioned at strategic locations in the model upon assembly beneath a peep hole wherein a peep hole is provided

going into the interior of the assembled model, the photo-optical system including a lens and a photograph or the like capable of being seen through the peep hole to provide an indication of what would normally be positioned within the original structure when viewing at the location of the peep hole.

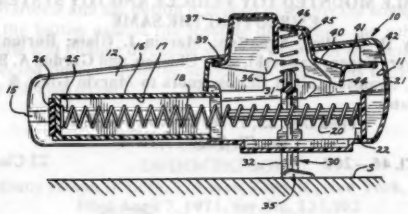


3,693,282

TOY VEHICLE LAUNCHING DEVICE WITH SAFETY MECHANISM

Cecil F. Adicks, Play1 Del Rey (Mound), and Cecil F. Adickes, Playa Del Rey, Calif., assignors to Tonka Corporation, Mound, Minn.

Filed April 5, 1971, Ser. No. 130,895
Int. Cl. A63h *33/0, 33/00*
U.S. Cl. 46—1 R **7 Claims**



A device for launching a toy vehicle across a floor surface, the piston or launch bar device having a spring actuated piston and means for locking the piston in a cocked position with the spring stressed, a button for releasing the piston from said locking means, and a safety device wherein the button will not release the piston unless the device is held firmly against the floor in launching position.

3,693,283

CHILD'S TOY

Dora Marcus, 345 Eighth Avenue, New York, N.Y.

Filed Oct. 1, 1971, Ser. No. 185,725
Int. Cl. A63h *33/00*
U.S. Cl. 46—16 **3 Claims**

A construction toy that a child user may build up around himself. It consists of a plastic ring placed over the head and which rests upon the shoulders. From the ring there are suspended a plurality of synthetic resinous or wood strips, three in front and three in back spaced at regular intervals. Small strips are attachable to the above strips in desired number and spacing by the use of magnets. A pointed hat may be formed in completely assembled condition, or constructed using similar strips with a frame to fit on the head and small strips attached to the frame with magnets. Another pointed strip may be provided to be used as a sceptre or whatever the user's imagination wishes him to believe.

3,693,284

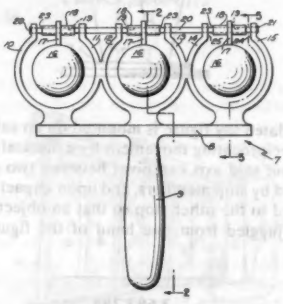
Patent Not Issued For This Number

3,693,285

TOY WITH A PLURALITY OF ORBITING MEMBERS

John Manzo, 1225 Cranston St., Cranston, R.I.

Filed June 1, 1971, Ser. No. 148,451
Int. Cl. A63h *1/32*
U.S. Cl. 46—47 **8 Claims**



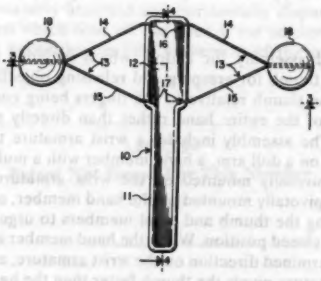
A toy device adapted to be held in the hand by a handle which supports a plurality of spaced arms between each pair of which there is rotatably supported on a pin extending between the arms a ball which may be rotated about the pin, the arrangement being such that one of the balls may rotate about the pin in one direction while another of the balls may be rotated about the pin in the opposite direction or be stationary depending upon the skill of the operator.

3,693,286

AMUSEMENT TOY

Ettore Marcotti, 2363 Arthur Avenue, Bronox, N.Y.

Filed April 21, 1971, Ser. No. 135,978
Int. Cl. A63h *1/32*
U.S. Cl. 46—47 **4 Claims**



An amusement toy consisting of a handle which includes a pair of oppositely disposed pivotable arms coupled to the sides of the handle which connect at their ends to balls which are

permitted to impact resiliently with each other on each side of the handle.

3,693,287

MUSICAL TOY

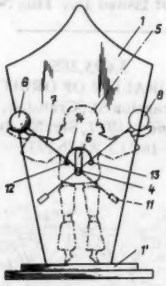
Claude Martin, Sainte-Croix, Switzerland, assignor to Reuge SA, Sainte-Croix, Switzerland

Filed May 21, 1971, Ser. No. 145,729

Claims priority, application Switzerland, May 7, 1971, 6774/71

Int. Cl. A63h *5/00*

U.S. Cl. 46—118 7 Claims



An articulated toy figure is mounted on an axle driven with a vertical reciprocating movement by a musical motor. A rod pivoted about said axis can pivot between two extreme positions defined by stop members, and upon impact with one stop is rebounded to the other stop so that an object on the rod is apparently juggled from one hand of the figure to another hand.

3,693,288

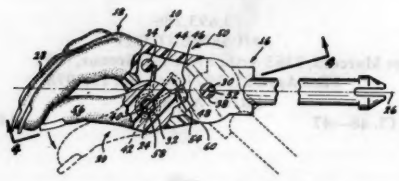
GRASPING HAND FOR DOLL

J. Stephen Lewis, Pacific Palisades; Harold B. Collins; Jurgis Sapkus, both of Manhattan Beach, and Juanito O. Villanueva, Lawndale, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Oct. 26, 1971, Ser. No. 192,424

Int. Cl. A63h *11/00*

U.S. Cl. 46—119 6 Claims



A hand assembly for a doll, which includes a pivotally mounted thumb for grasping and releasing objects, the position of the thumb relative to the fingers being controlled by pivoting of the entire hand rather than directly moving the thumb. The assembly includes a wrist armature that can be mounted on a doll arm, a hand member with a multiple finger portion pivotally mounted on the wrist armature, a thumb member pivotally mounted on the hand member, and a spring connecting the thumb and hand members to urge the thumb toward a closed position. When the hand member is pivoted in a predetermined direction on the wrist armature, a part of the wrist armature pivots the thumb faster than the hand member so that the thumb opens on the finger portion of the hand. When the hand is pivoted to an extreme position the wrist armature maintains the hand posed with the thumb opened.

3,693,289

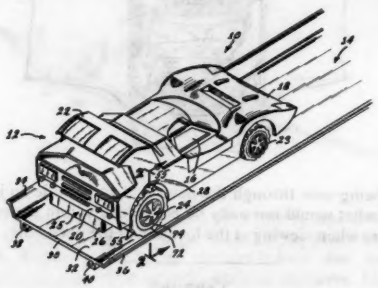
TOY VEHICLE WITH SOUND-PRODUCING WHEELS

Orbert S. Smith, Hawthorne; Denis V. Bosley, Palos Verdes Peninsula, and George Soulakis, Pasadena, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 18, 1971, Ser. No. 107,383

Int. Cl. A63h *17/34*

U.S. Cl. 46—175 12 Claims



A toy racing vehicle and track system wherein the toy vehicle is self-powered and has wheels with interrupted running surfaces which induce vibrations of the vehicle and/or the track system over which the vehicle moves so as to simulate the sound of a real racing vehicle.

3,693,290

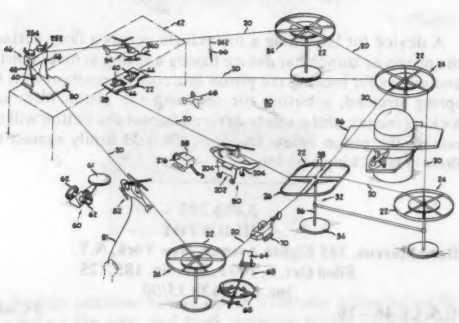
CABLE MOUNTED TOY VEHICLE AND TOY SYSTEM EMPLOYING THE SAME

Jeffrey D. Breslow, Evanston; Marvin I. Glass; Burton C. Meyer; Eugene Jaworski, all of Chicago, and Gordon A. Barlow, Evanston, all of Ill., assignors to Marvin Glass & Associates

Filed Dec. 23, 1970, Ser. No. 100,873

Int. Cl. A63h *11/10*

U.S. Cl. 46—202 22 Claims



A toy system of the type wherein toy vehicles are suspended and move upon an elevated rail system. The exemplary embodiment contemplates the use of a plurality of rails, some of which may intersect each other, and vehicles which are suspended by the rails and include drive mechanism for driving the same along the rails. The vehicles further include a transfer device which is operative when the vehicle is at an intersection of two rails to transfer the vehicle from the rail on which it was traveling to the intersecting rail. Also included is a retaining device to insure that a vehicle will not drop from the rails during transfer at an intersection. The system further includes a vehicle operative to release one or more projectiles at a target mechanism with the target mechanism being operative to launch one or more projectiles upon being struck by a projectile dropped from a vehicle. Also contemplated is an auxiliary, normally ground engaging vehicle and a cooperating

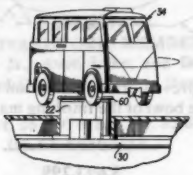
vehicle to be suspended from the rail system. Cooperating elements on the auxiliary vehicle and the suspended vehicle are operative to releasably secure the two together when one vehicle engages the other during relative movement therebetween.

3,693,291

TOY VEHICLE AND PLAYING BOARD

Masaru Aoki, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan

Filed Sept. 16, 1971, Ser. No. 180,990
Int. Cl. A63h *33/00*
U.S. Cl. 46—202 **5 Claims**



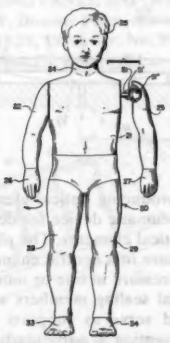
An amusement device for small children featuring a playing board resembling a town having building structures and intersecting streets, openings provided in the surface of the board at the intersections of the streets, buttons mounted within the openings for upward movement and a toy vehicle featuring powered wheels permitting travel along the streets and a disk mounted for rotation in a plane below the vehicle and above the streets such that as the vehicle enters the intersection of two streets and the button is pushed upwardly the engagement of the button against the rotating disk causes the vehicle to rotate and change direction while lowering of the button at a selected time permits the vehicle to continue its travel along the selected street.

3,693,292

SWIMMING DOLL

Anthony Joseph Di Leva, 174 West 72nd St., New York, N.Y.

Filed April 7, 1971, Ser. No. 131,902
Int. Cl. A63h *33/26*
U.S. Cl. 46—247 **9 Claims**



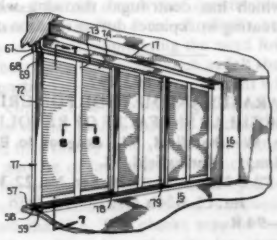
A swimming doll made of separable parts comprising a main body part, leg, foot, arm and hand parts, as well as a head, all of which parts are detachable from one another, certain of the parts being connected by ball and socket joints adjustable relative to one another as with the leg and foot parts to provide a rudder effect so as to steer the swimming doll, and in the hand parts to control the speed of propulsion of the doll. The head part is connected to upstanding neck portion in such a manner, either through the twisting of the neck over a motion of the head relative to the neck, the head will be turned from side to side as when the arms are extended for propelling the doll. A self contained motor unit including transversely extending shaft, the ends of which extend outwardly through the sides of the main body for driving connection with the arms at the shoulders of the doll. This propulsion motor unit is removable from the back of the doll through an opening which has a tight fitting cover thereover, and which is pliable to operate a switch on the motor unit. Batteries for operating the electric motor according to one form of the invention are either contained in the body housing for the motor or in the legs of the doll. According to another form of the invention there is provided a spring operated motor that can be wound by extending a key through the cover back wall.

3,693,293

PROTECTIVE SLIDING WALL PANEL ASSEMBLY

Bruce C. Egan, Jr., 5750 N. Federal Highway, Ft. Lauderdale, Fla.; Morton S. Rifkin, Miami, and Grover C. King, Plantation, both of Fla., assignors to Bruce C. Egan, Jr., Fort Lauderdale, Fla.

Filed May 6, 1971, Ser. No. 140,785
Int. Cl. E06b *5/12*
U.S. Cl. 49—56 **7 Claims**



A panel slider assembly for protecting verandas and exposed glass surfaces from wind damage and burglary attempts, comprising at least one panel slider of snap-lock construction, an inverted channel-shaped frame housing that extends along the entire bottom edge of the panel slider, a plurality of roller frames which are spaced apart within the frame housing and are equipped with horizontally disposed retention shelves, a bottom roller which is rotatably attached to each roller frame, a floor-mounted retention channel having a mushroom track upon which the bottom rollers travel and horizontally disposed retention lips which are higher and spaced closer together than the retention shelves, a downwardly disposed adjustment channel which is attached to the ceiling and within which the top portion of the wall panel slides, and at least two pairs of rotatably attached and horizontally disposed adjustment rollers which fend off the sides of the adjustment channels while permitting vertical movement of the panel slider therewithin.

3,693,294

Patent Not Issued For This Number

3,693,295

Patent Not Issued For This Number

3,693,296

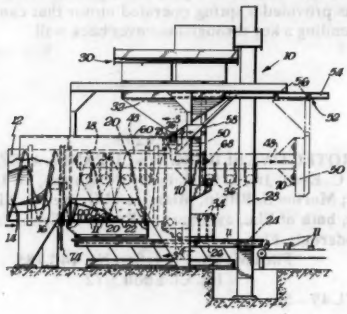
WORKPIECE TREATING APPARATUS

James H. Carpenter, Jr., Hagerstown, Md., assignor to The Carborundum Company, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 687,701, Dec. 4, 1967, Pat. No. 3,521,406. This application July 17, 1970, Ser. No. 55,699

Int. Cl. B24c 3/00

U.S. Cl. 51—13 21 Claims



A workpiece treating arrangement includes a slatless rotatable drum which has centrifugal throwing wheels disposed therein for treating workpieces during rotation of the drum.

3,693,297

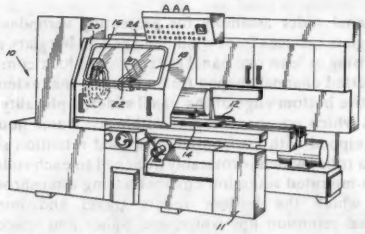
APPARATUS AND METHOD FOR GRINDING IRREGULAR SURFACES OF REVOLUTION

Roald Cann, Weathersfield, Vt., assignor to Bryant Grinder Corporation, Springfield, Vt.

Filed March 24, 1970, Ser. No. 22,307

Int. Cl. B24b 17/02, 5/16, 5/36

U.S. Cl. 51—94 R 9 Claims



A workhead, for the grinding of non-circular workpieces, equipped with a pair of compensating cams to shift the workpiece axis relative to the axis of the grinding wheel. The "X" cam shifts the workpiece axis horizontally; the "Y" cam shifts it vertically. The rotation of work and cams is synchronized so that the line jointing the point of grind, the center of the grinding wheel and the instant center of curvature of the desired surface is coincident with the feed and compensation line of the grinder at all times.

3,693,298

VIBRATORY FINISHING MACHINE

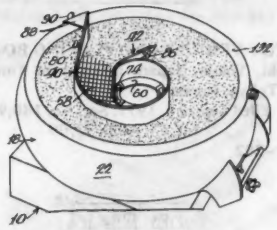
Achille K. Ferrara, 848 Westgate Drive, Addison, Ill.

Filed Jan. 14, 1971, Ser. No. 106,503

Int. Cl. B24b 31/06

U.S. Cl. 51—163 16 Claims

A vibratory finishing machine having an improved screen separating device and discharge mechanism for separating the finished parts from the polishing media at the conclusion of a finishing operation and for discharging the parts from the machine, and improved drive mechanism for imparting vibratory motion to the bowl of the finishing machine.



3,693,299

Patent Not Issued For This Number

3,693,300

Patent Not Issued For This Number

3,693,301

METHOD FOR PRODUCING OPTICAL ELEMENTS WITH ASPHERICAL SURFACES

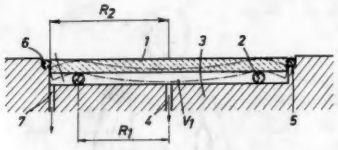
Gerard Lemaitre, Marseille, France, assignor to Etablissment Public: Agence Nationale de Valorisation de la Recherche (Anvar) Tour Aurore, Paris, France

Filed Jan. 19, 1971, Ser. No. 107,680

Claims priority, application France, May 27, 1970, 7019261

Int. Cl. B24b 47/00

U.S. Cl. 51—235 8 Claims



A method for producing optical elements with aspherical surfaces with a pneumatic device for deforming the plates to be formed into optical elements. The plates are deformed by reducing the pressure in a central chamber independently of the reduction of pressure in one or more concentric annular chambers. Toroidal sealing members are provided between the chambers and serve as supports for the plate to be deformed. The invention is particularly useful in optical instruments for astronomy.

3,693,302

ABRASIVE DICING OF SEMICONDUCTOR WAFERS

Glade L. Hakes, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

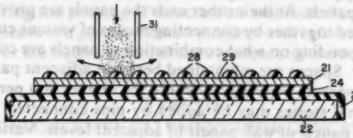
Filed Oct. 12, 1970, Ser. No. 79,929

Int. Cl. B24c 1/04

U.S. Cl. 51—312 4 Claims

A heat curable plastisol is used for forming an easily applied, abrasion resistant and acid etch resistant mask to a

semiconductor wafer, preliminary to dicing, for protecting a



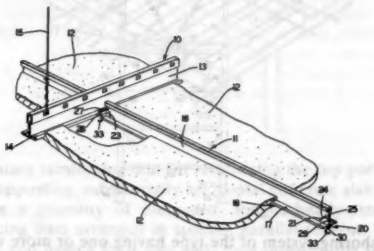
supporting substrate, and for attaching the semiconductor wafer to the protected substrate.

3,693,303

REMOVABLE GRID MEMBER

Lucien R. Downing, Jr., Avon Lake, and David F. Mieyal, Strongsville, both of Ohio, assignors to Donn Products, Incorporated

Filed Oct. 26, 1970, Ser. No. 83,895
Int. Cl. E04b *5/52*
U.S. Cl. 52—476 **8 Claims**



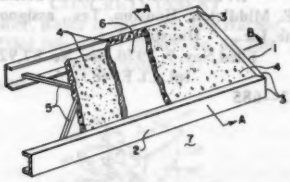
A removable member for an assembly of members supporting panel boards having means cooperating therewith permitting disassembly of the members and a reaction force on one of said members tending to maintain the members in secure assembled relationship with the panel boards.

3,693,304

BUILDING PANEL AND WALL

William O. Shell, 52 W. Downer Place, Aurora, Ill.

Filed July 29, 1970, Ser. No. 59,227
Int. Cl. E06b *1/04*
U.S. Cl. 52—204 **12 Claims**



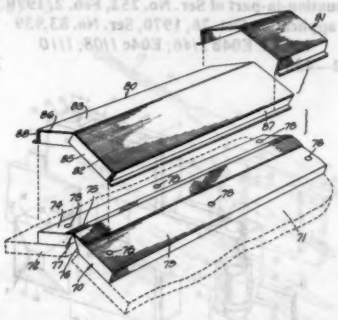
A structural, or non-structural element forming a rigid module of various sizes and dimensions, which may be described as a panel, including a perimeter metal frame either continuous or discontinuous at certain points and a rigid filler material either homogeneous or non-homogeneous such as concrete with necessary stiffening and/or reinforcing elements for both frame and filler material and with or without sound or heat insulating material embedded within the module or panel, a plurality of the modules or panels being utilized to form the walls of a building, with or without additional structure, the frames of the modules or panels mutually abutting and constituting the exterior and/or interior structure, the closure and/or partition walls with such openings as may be necessary for windows of various types and/or doors as may be required.

3,693,305

CAP ASSEMBLY FOR ROOF RIDGE

Joseph P. Kneisel, 3920 El Lado Drive, La Crescenta, Calif.

Division of Ser. No. 885,148, Dec. 15, 1969, Pat. No. 3,626,439. This application Nov. 26, 1971, Ser. No. 202,140
Int. Cl. E04d *1/30*
U.S. Cl. 52—276 **1 Claim**



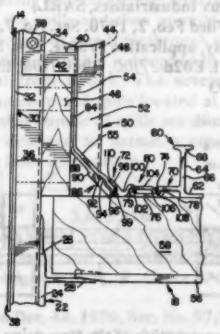
There is disclosed herein a new roof construction wherein the roofing material is in the form of planks and may be secured directly to rafters, eliminating the need for sheathing and a moisture barrier or membrane such as felt sheeting. The planking has a particular lock joint arrangement which, along with joint drain clips, provides a watertight construction. The exposed surfaces of the planks may be textured to simulate shakes, shingles, tiles or any other texture or pattern desired, and the planks may be of laminated construction, such as of plywood. Not only is the construction water-tight, but it is particularly structurally sound and with no exposed fasteners, such as nails and the like. The planks may be readily mass produced and then shipped to the site for installation. A fireproof coating and coloring may be applied to the planks during manufacture thereof.

3,693,306

REFRIGERATOR VEHICLE FLOOR EXTRUSION

Robert G. Heinz; Harry Cohen, and Edwin L. Carmel, all of Cincinnati, Ohio, assignors to Pullman Incorporated, Chicago, Ill.

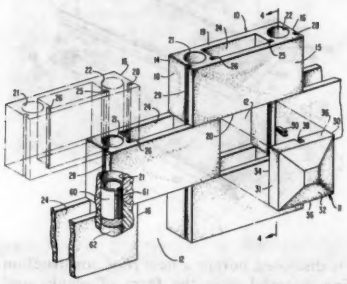
Filed June 19, 1970, Ser. No. 47,855
Int. Cl. E04b *5/10*
U.S. Cl. 52—288 **14 Claims**



An extruded corner member for providing a seal between the floor of a refrigerator cargo carrying vehicle and a side wall, the member having interlocking portions for securing to

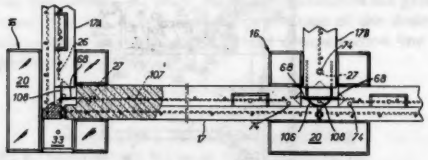
the floor and to the side wall panels. The interlocking portions provide a watertight joint which can be sealed to prevent spoilable fluid from penetrating to the underside of the floor structure and contaminating insulating materials. The corner member is self-securing and does not require additional rivets, screws or other fasteners to secure it to the floor or side wall panels.

3,693,307
VARIABLE WALL STRUCTURE
George B. Muse, Calhoun, Ga.
Continuation-in-part of Ser. No. 252, Feb. 2, 1970. This application Oct. 26, 1970, Ser. No. 83,939
Int. Cl. E04b *2/46*; **E04c** *1/08, 1/10*
U.S. Cl. 52—438 **3 Claims**



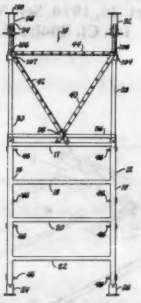
A variable wall structure in which a wall is formed by a plurality of overlying horizontal courses of building blocks, with adjacent building blocks in the same course being spaced from one another to provide openings in the wall, and with the openings in adjacent courses of blocks being staggered with respect to each other. Vertical alignment channels formed in the blocks and alignment wedges are placed in the channels to assure proper alignment of the blocks in successive courses of blocks. The blocks define circular vertical openings and expandable sleeves are inserted in the openings. Mortar is poured down the aligned openings and sleeves to bond the blocks of the wall structure. Filler blocks are provided to be received within the wall openings, and means are provided to hold the filler blocks in place prior to application of a grout or other holding means. The filler blocks can be selectively positioned to give the finished wall any of a number of desired appearances.

3,693,308
BUILDING CONSTRUCTION
Henri Louis Trezzini, Paris, and Norbert Czaryski, Fresnes, both of France, assignors to B.C.T.I. Bureau de Coordination de Travaux Industrialises, SARL, Paris, France
Filed Feb. 2, 1970, Ser. No. 7,692
Claims priority, application France, Feb. 18, 1969, 6903979
Int. Cl. E02d *27/00*; **E04b** *1/00*; **E04c** *1/10*
U.S. Cl. 52—293 **4 Claims**



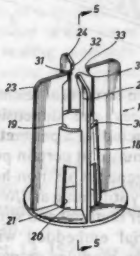
A building construction of the type using prefabricated reinforced concrete panels for the internal and external walls and the flooring is provided with a concrete foundation having a sole-piece on which are mounted a plurality of supporting blocks having recesses in which the first level of panel walls are mounted. The panels are positioned in the supporting blocks by pins extending between aligned holes in the recesses and the panels. At their other ends the panels are provisionally connected together by connecting means of various configurations depending on what combination of panels are connected together. Spaces are maintained between adjacent panels into which concrete is poured to make the connection permanent. Additional stories may be added by pins connected between the wall panels of wall panels of adjacent levels. Various seals may be provided between the panels for weather protection and for preventing the escape of concrete during pouring.

3,693,309
SHORING SYSTEM
Jacob H. Kutchai, 630 Merrick, Detroit, Mich.
Filed Aug. 19, 1970, Ser. No. 65,137
Int. Cl. E04g *25/00*
U.S. Cl. 52—632 **8 Claims**



A shoring system of the type having one or more vertically arranged frame sections and telescopic extension members extendable therefrom. A frame brace bar extends laterally between and is slidably connected to the extension members at the top of the frame section to provide lateral stability and to serve as an anchor point for diagonal braces to the extension members. Jack screws are disposed on the ends of the extension members and are provided with load-bearing sleeves which fit radially over the jack staffs and inner stabilizing shafts which extend telescopically into the jack staffs and are of a length greater than the length of the threaded portion of the jack staff.

3,693,310
SUPPORT FOR ELONGATED REINFORCING MEMBERS IN CONCRETE STRUCTURES
Thomas E. Middleton, Houston, Tex., assignor to Pre-Stress Concrete, Inc., Houston, Tex.
Filed Nov. 9, 1970, Ser. No. 87,924
Int. Cl. E04c *5/16*
U.S. Cl. 52—685 **2 Claims**



A support for reinforcing members used in fabricating concrete structures including a base and an upright portion

which is formed to receive and support two intersecting reinforcing members in a concrete structure at the point where the members intersect. The support holds the reinforcing members during the pouring of concrete to maintain the reinforcing members at a predetermined position with reference to the ground or the outer surface of the concrete structure.

3,693,311
REINFORCEMENT ELEMENTS FOR CONCRETE STRUCTURES

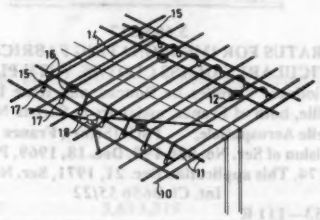
Sven-Erik Bjerking, Gotagatan 3, Uppsala, Sweden

Continuation of Ser. No. 565,423, July 15, 1966, abandoned, and a continuation-in-part of Ser. No. 332,447, Dec. 23, 1963, Pat. No. 3,302,360. This application Nov. 8, 1968, Ser. No. 774,539

Claims priority, application Sweden, Nov. 12, 1965, 14635/65

Int. Cl. E04c *5/18*

U.S. Cl. 52—677 **6 Claims**



A unitary reinforcing mat for reinforcing the top portion of a self-supporting, substantially horizontal concrete slab which includes a plurality of elongated, longitudinally-extending reinforcing bars arranged in spaced, parallel relation to one another and having their free ends bent downwardly to form support legs which are substantially shorter than the remaining longitudinal portion of the bars; at least two connecting bars extending transversely across the longitudinal bars and fixedly attached thereto at points spaced from the tips of the support legs but immediately adjacent the bends in the longitudinal bars so as to rigidly support the support legs and plastic coverings on the tips of the support legs to prevent rusting of any exposed portion thereof. The mats may be formed as a plurality of joined, single longitudinal bars or as pairs of parallel, longitudinal bars and such pairs and multiple single units may be combined with their longitudinal portions parallel to one another or transversely crossing one another.

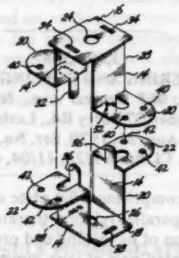
3,693,312
CONCRETE INSERT

Herman C. Miller, Route 2, Box 2220, Gig Harbor, Wash.

Filed July 27, 1970, Ser. No. 58,286

Int. Cl. E04b *1/41*

U.S. Cl. 52—699 **5 Claims**



A pair of substantially identical formed metal members are interconnected to form a hollow rectangular body having pairs of outwardly extending ears associated with each opposed end of the rectangular body. The ears include holes for receiving fasteners for fixedly mounting the body on a concrete form. The end portions of the rectangular body include female coupling means of varying size adapted to alternatively receive and hold threaded or unthreaded pin means.

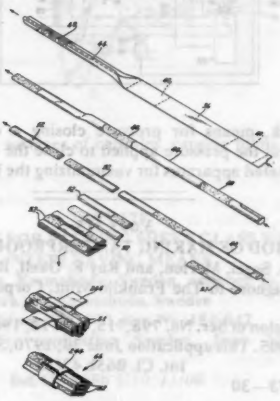
3,693,313
CIGARETTE PAPER TUBE MANUFACTURE

John H. Sexstone, Middletown, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed July 29, 1970, Ser. No. 59,052

Int. Cl. A24c *5/46, 5/52*; **B65b** *19/34*

U.S. Cl. 53—3 **35 Claims**



In the manufacture of spills of cigarette paper for use in the manual making of filter cigarettes, apparatus is provided for initially forming a web of cigarette paper into a hollow tube. The formed tube is flattened and then cut in predetermined lengths to form spills to be used with a manual cigarette making machine. The web has a tipping part. A photocell arrangement is operable to sense the location of the tipping part in relation to the cutting of the tube to assure cutting along the center line of the tipping part as well as along a line centrally located between tipping parts. In order that there be proper registration of the tipping part in relationship to such cutting, the photocell arrangement is designed to adjust the speed of movement of a cutting knife. The cut spills are then picked up by a separating conveyor traveling at a higher speed to space the spills from one another. The spaced cut spills are then directed against a stop plate after having been deformed slightly by the separating conveyor to impart rigidity thereto. The spills are deposited on a collecting conveyor which transfers the spills substantially parallel to one another and in a direction substantially normal to the path of travel of the paper tube. A spacing gate cooperates with the collecting conveyor to collect the spills and then permits only a predetermined number thereof to pass therethrough to a spill bundling assembly. A banding assembly is designed to sever a length of banding material from a web. The severed band is then secured about the collected spills located at the bundling assembly. The banded bundle of spills are discharged and then placed in a kit designed to permit a cigarette smoker to manually make a filter tip cigarette.

3,693,314
CLOSING SYSTEM FOR BAGS AND THE LIKE

Philip L. Reid, Lyman, and Edward L. Holcombe, Taylors, both of S.C., assignors to W. R. Grace & Co., Duncan, S.C.

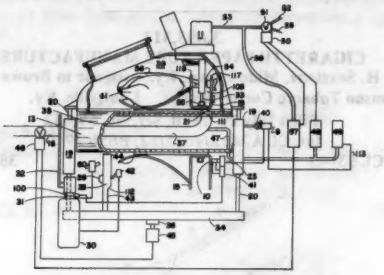
Filed Dec. 14, 1970, Ser. No. 97,747

Int. Cl. B65b *31/02*

U.S. Cl. 53—22 B **8 Claims**

Disclosed is an apparatus and method for closing containers and especially useful for closing bags containing vacuum

packaged products. The following features are included: means for straddling the bag's neck, means for positioning the



bag's neck, means for pressure closing a clip, means for sensing that the pressure applied to close the clip is sufficient and associated apparatus for vacuumizing the bag.

3,693,315

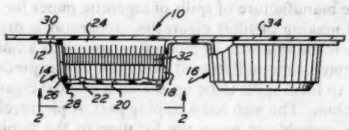
METHOD OF MAKING TAMPERPROOF PACKAGE

Joseph M. Segel, Merion, and Roy E. Okell, Broomall, both of Pa., assignors to The Franklin Mint, Corporation, Yeadon, Pa.

Division of Ser. No. 798,715, Feb. 12, 1969, Pat. No. 3,615,005. This application June 30, 1970, Ser. No. 60,193

Int. Cl. B65b *47/10*

U.S. Cl. 53—30 **6 Claims**



A tamperproof and easy-open package of polymeric plastic materials is disclosed wherein a base sheet is provided with specially designed receptacles integral therewith and defined by corrugated side walls with a sharp top edge and a bottom wall. A top sheet overlies the open end of the receptacle and is welded to a peripheral flange portion of the base sheet with the welds circumscribing the receptacles. When downward pressure is applied on the top of the receptacle, the bottom wall is pushed in, the receptacle ruptures at a weak section between the corrugated side wall and the bottom wall before the bottom wall makes contact with an article within the receptacle.

3,693,316

MACHINES FOR WRAPPING BLOCK-LIKE ARTICLES

Alfred Schmermund, 62, Kornerstrasse, D-5820 Gevelsberg, Germany

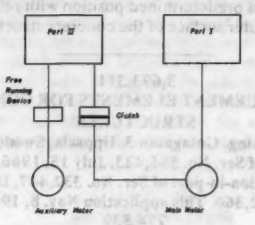
Filed May 1, 1970, Ser. No. 33,743

Claims priority, application Great Britain, May 8, 1969, 23,485/69

Int. Cl. B65b *53/00, 65/00*

U.S. Cl. 53—52 **1 Claim**

In machines for wrapping rectangular block-like articles such as cigarette packets, the articles are enveloped in wrapping material in a first part of the machine and the wrapping material is heat sealed in a second part of the machine. Each part is provided with drive means so that when the first part is inoperative (during changing of a reel of wrapping material) the second part remains operative and damage to the articles due to overheating, while stationary in the second part, is avoided. The parts may be driven by separate motors, or a single motor employing a clutch. Alternatively, an auxiliary motor may drive the second part when a main motor driving both parts is inoperative. The speed at



which the second part is driven may be related to the temperature at which the wrapping material is heat sealed.

3,693,317

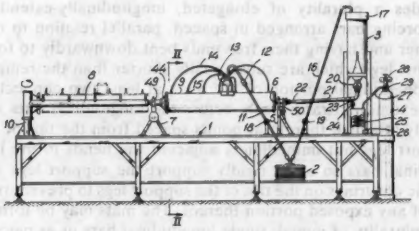
APPARATUS FOR IMPREGNATING FABRICS, MORE PARTICULARLY GLASS CLOTHS, WITH PLASTICS

Andre Violleau, Vitrolles Le Roucas, and Rene Louis Coffy, Marseille, both of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris (Seine), France

Division of Ser. No. 886,198, Dec. 18, 1969, Pat. No. 3,653,174. This application Dec. 21, 1971, Ser. No. 210,315

Int. Cl. B65b *55/22*

U.S. Cl. 53—111 R **10 Claims**



An apparatus for impregnating fabrics, more particularly but not exclusively glass cloths, with plastics such as synthetic resins still in the fluid state, wherein a roll of the fabric is first subjected to the action of a substance intended to enhance the intimacy of the bond between the fibers and the impregnating plastic, and is thereafter exposed to a vacuum together with said plastic, following which the plastic content of the fabric is calibrated and the impregnated fabric is finally packaged for storage.

3,693,318

TRAY COVERING AND SEALING APPARATUS

Winton E. Balzer, 963 Central Ave., Needham, Mass., and Kenneth M. Knobel, 37 Percy Rd., Lexington, Mass.

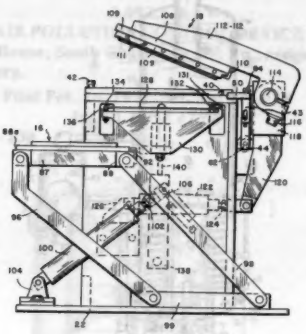
Filed Aug. 26, 1970, Ser. No. 66,965

Int. Cl. B65b *7/28, 41/04, 41/14*

U.S. Cl. 53—329 **10 Claims**

A sheet holder comprising a flat plate overlain by a bar held in closely spaced parallel relation thereto for holding a sheet with a short portion of its leading end projecting therefrom, a reciprocably mounted pair of jaws movable toward and from the sheet holder for taking hold of the leading end of the sheet and drawing out a predetermined length thereof, a tray holder and a platen movable from below and above the plane of the sheet to press the sheet into engagement with the rim of a tray supported by the tray holder to effect sealing of the sheet to

the rim of the tray, a sheet severing device for cutting off the sheet close to the sheet holder, and control means for effecting movement of the jaws, tray holder and platen in timed relation.



3,693,319

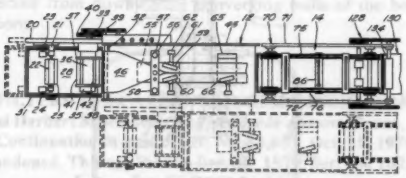
WRAPPING INDIVIDUAL SLICES OF FOOD

David N. Hunsader, Green Bay, Wis., assignor to Swift & Company, Chicago, Ill.

Division of Ser. No. 30,700, April 22, 1970. This application Dec. 10, 1971, Ser. No. 206,971

Int. Cl. B65b *51/30*

U.S. Cl. 53—123 6 Claims



A method and apparatus for wrapping individual slices of product, such as cheese, in film where the slices are first cut from a continuously produced ribbon and are thence carried upon a web of film that is drawn through enfolding operations to entube the successive slices by successive pairs of jaws. The jaws are evenly spaced on endless conveyor driven at a speed slightly greater than the ribbon of product thus producing spaces between successive slices where the jaws engage the film and where the film is first heat sealed while engaged and then severed immediately before being disengaged and discharged.

3,693,320

NOVEL CAPSULE FINISHING APPARATUS

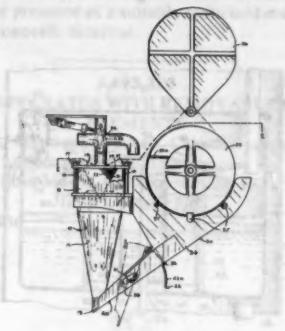
Carl C. Garland, 15700 Kentfield, Detroit, Mich.

Filed Nov. 9, 1970, Ser. No. 88,053

Int. Cl. B07b *7/04*; B08b *5/00*

U.S. Cl. 53—167 5 Claims

Apparatus and means are provided for finishing pharmaceutical capsules under vacuum whereby any empty capsules present are disqualified and dust and other contamination are cleared from the surfaces of capsules, capsule filling machinery, etc.



3,693,321

MACHINES FOR PACKING SHEET GLASS WITH INTERLEAVING MEANS

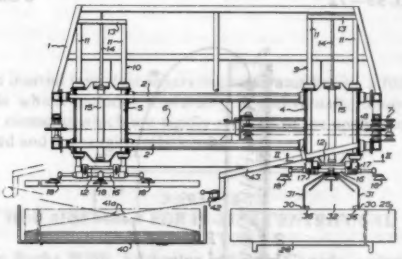
Leif Billy Nilsson, Emmaboda, Sweden, assignor to AB Emmaboda Glasverk, Emmaboda, Sweden

Filed June 21, 1971, Ser. No. 154,842

Claims priority, application Sweden, June 22, 1970, 8551/70

Int. Cl. B65b *5/10*, *11/00*

U.S. Cl. 53—244 3 Claims



A machine for packing glass sheets interleaved with paper and having two carriages provided with movable suction heads and movable along parallel paths simultaneously in mutually opposite directions for alternately picking up the glass sheets one by one at a pick-up station and stacking them at a delivery station, and a holder with a paper roll secured to one of the carriages in position to be carried past the delivery station on each station-to-station movement thereof, thereby rolling out paper over the glass sheet last delivered.

3,693,322

APPARATUS AND METHOD FOR DEODORIZING OILS

Dewey D. Lineberry, Louisville, Ky., and Frank A. Dudrow, Louisville, Ky., assignors to Chemetron Corporation, Chicago, Ill.

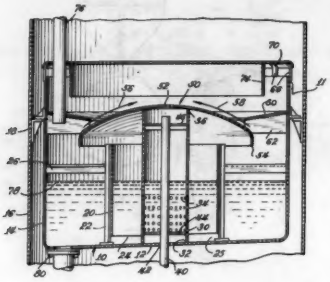
Filed July 17, 1970, Ser. No. 55,675

Int. Cl. B01d *19/00*

U.S. Cl. 55—54 18 Claims

This invention provides an apparatus and method for contacting liquid with gas in a vessel in which an upstanding jet-forming means directs jets of gas along a path having a horizontal component and through the liquid. The jet forming element may be an upright distributor having orifices spaced along its length from near the bottom of a tray to about the level of the liquid. The jets of gas generate a rising column of liquid and inject gas into the column so formed. Considerable

velocity develops and the rapidly moving gas and liquid are impinged with turbulence against a plate and deflected downward. Currents of escaping vapor are driven against each other and against elements of the apparatus to coalesce and separate entrained droplets.



3,693,323

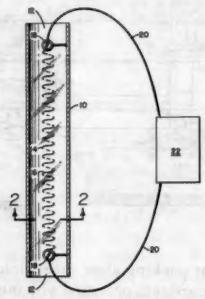
PROCESS FOR THE TRAPPING OF MERCURY VAPORS AND APPARATUS THEREFOR

Preston L. Grant, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Dec. 30, 1970, Ser. No. 102,571

Int. Cl. B01d *53/04*

U.S. Cl. 55—72 **6 Claims**



An improved process and apparatus for the collection of mercury vapors from a volume of air or other gases. The improvement comprises the direct resistance heating of a noble-metal absorbent in a mercury trap to release absorbed mercury for the subsequent measurement thereof.

3,693,324

FLASH ECONOMIZER FOR VARIABLE LOADS

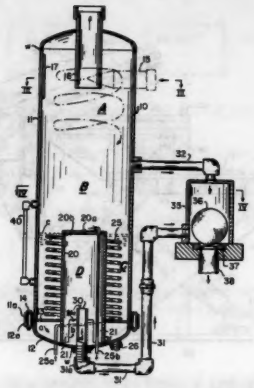
John A. McNeil, 161 Franklin Avenue, Brookville, Pa.

Filed Feb. 9, 1972, Ser. No. 224,866

Int. Cl. B01d *19/00*

U.S. Cl. 55—191 **15 Claims**

Apparatus is provided for separting out pure flash or dry steam from a blowdown effluent discharge and, at the same time, for recovering a maximum amount of heat from and cooling the liquid content of the effluent to enable directly discharging the liquid into a natural body of water. The apparatus has an elongated main chamber-defining container or vessel provided with a vortex outlet for the steam in its upper area, an intermediate separation area, a heat exchange coil and baffle assembly within a bottom liquid collecting area, and pressure-sensitive trap means connected between lower and intermediate areas within the container for maintaining an effective and efficient operation under variable pressures and flow rates of introduction of the effluent.



3,693,325

DEVICE FOR SEPARATING FOAM INTO ITS CONSTITUENT LIQUID AND GASEOUS PHASES

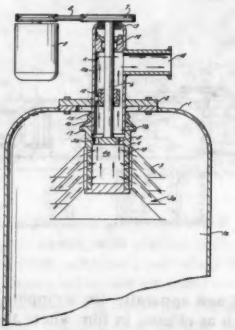
Hans Muller, Im Allmandli, Erlenbach, Zuerich, Switzerland

Filed Feb. 11, 1971, Ser. No. 114,598

Claims priority, application Switzerland, Feb. 16, 1970, 2205/70

Int. Cl. B01d *19/02*

U.S. Cl. 55—178 **8 Claims**



A housing defines a chamber for foam consisting of a gaseous and liquid phase. A rotatable shaft extends from the exterior to the interior of the housing; the portion located in the interior of the housing is in form of a tubular hollow shaft portion connected with the remainder of the shaft which extends to the exterior of the housing and is of solid cross section. The portion of the shaft of solid cross-section is gas-tightly surrounded by a stationary conduit and an annular sealing element of elastomeric material is either fast with the conduit in the interior of the housing and has a lip which engages the sealing surface on the rotatable hollow tubular shaft portion, or is fast with the hollow tubular shaft portion and has a lip which engages a sealing surface on the stationary conduit, in either case in sliding relationship. Foam-breaking elements are carried for rotation by the hollow tubular shaft portion and define with one another gaps extending radially of the latter and communicating with the interior of the hollow tubular shaft portion, with the interior in turn communicating with the space between the conduit and the solid cross-section shaft

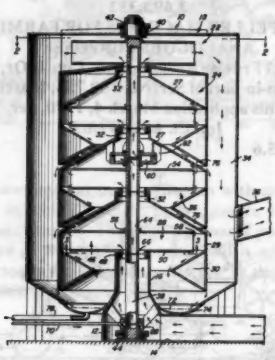
portion so that gaseous phase separated from the liquid phase by the foam-breaking elements can escape from the housing in this manner.

3,693,326

AIR POLLUTION CONTROL DEVICE

Clifford T. Deane, South Charleston, W. Va., assignor to Vortex Air Corp.

Filed Feb. 16, 1971, Ser. No. 115,437
Int. Cl. B01d 47/08
U.S. Cl. 55—230 9 Claims



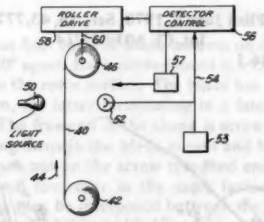
Air polluting smoke particles are substantially removed from the upflow of smoke through a vertical series of housing sections into which water under pressure is injected closely below impeller blade assemblies. The blade assemblies are driven by a fluid motor through which the pressurized water is conducted to produce turbulence and mixing of the smoke with the water. The heavier water and smoke particles are flung radially outwardly to form a slurry which is baffled and collected from downwardly converging walls of the housing sections.

3,693,327

FILTERS AND CARBON MONOXIDE INDICATORS

Israel Herbert Scheinberg, 5447 Palisade Avenue, Bronx, N.Y.

Continuation-in-part of Ser. No. 85,057, Oct. 29, 1970, abandoned. This application Dec. 30, 1970, Ser. No. 102,869
Int. Cl. B01d 23/24
U.S. Cl. 55—274 39 Claims



A filter wherein the filter medium is selected from the group consisting of amorphous hemoglobin, crystalline hemoglobin, amorphous heme and crystalline heme in the presence of a stoichiometric excess, with regard to the iron in said hemoglobin or heme, of a suitable reductant. The filter is adapted to remove carbon monoxide from air or the gases inhaled by a smoker. The filter medium assumes a predetermined color and infrared absorptivity characteristic when exposed to a predetermined quantity of carbon monoxide. Support for said filter medium may be provided with windows for visual access to said filter medium and automatic means may be provided for replacing said filter medium in response to detection of said color or infrared characteristics. Hemoglobin or heme in the presence of a suitable reductant may also serve as a carbon monoxide detector.

3,693,328

FILTER APPARATUS WITH REMOVABLE FILTER ELEMENTS

Gene Paucha, Montreal, Quebec, Canada, assignor to Farr Company, El Segundo, Calif.

Filed May 4, 1970, Ser. No. 34,132
Int. Cl. B01d 45/06
U.S. Cl. 55—436 8 Claims

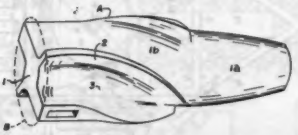
An inertial type dust separating apparatus having a filtering media which includes a plurality of individually removable filter elements which are rigidly secured to the apparatus in a spaced and converging relationship.

3,693,329

HUB ASSEMBLY FOR IN-LINE CENTRIFUGAL SEPARATOR

Robin Burke Willis, Edmonton, Alberta, Canada, assignor to Porta-Test Manufacturing Ltd., Edmonton, Alberta, Canada

Filed Aug. 24, 1970, Ser. No. 66,468
Int. Cl. B01d 45/12
U.S. Cl. 55—457 7 Claims



The hub assembly comprises a cigar-shaped hub carrying vanes. The hub defines a central bore opening at the downstream end. Two or more vanes define conduits leading into the bore.

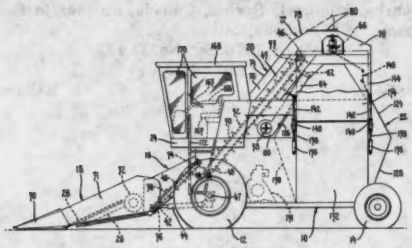
The assembly is normally mounted in the inlet of a vortex tube. The vanes force the gas flow into helical paths for centrifugal separation of entrained liquid. The bore and conduits connect the low pressure zone at the axis of the vortex tube with the space exterior of the vortex tube.

3,693,330

SELF PROPELLED SWEET CORN HARVESTER

Wilbert D. Weber, Mississauga, and Robert Ashton, Islington, Ontario, both of Canada, assignors to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada

Filed Oct. 8, 1971, Ser. No. 187,677
Int. Cl. A01d 45/02
U.S. Cl. 56—12.8 3 Claims



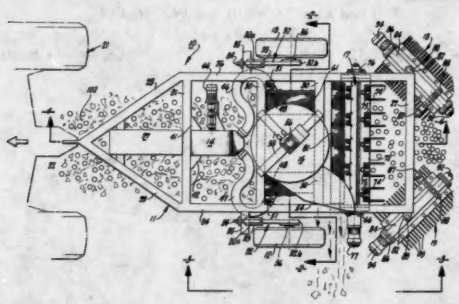
A self propelled sweet corn harvester with a corn head having multiple snapping units with a pair of snapping rolls and a pair of gathering chains for each snapping unit, a tank for temporary storage of ears of unhusked green corn, a conveyor system to elevate the ears of corn from the corn head to the storage tank, and cleaning means including a fan, a beater, a hood assembly and a panel assembly for removing stalks and other trash from the ears of corn and ejecting the trash from the harvester. The beater is mounted above the storage tank for both vertical and horizontal adjustment. The hood assembly includes an adjustable section for adjusting the size of the passage between the beater and the hood assembly through which stalks and trash are ejected from the machine. The panel assembly includes a panel pivotally attached to the beater supports and movable with the beater and a second panel pivotally attached to the first panel and to the storage tank.

3,693,331

WINDROW LEAF SCAVENGER

John Edward Richter, and George Olavi Tiura, both of Modesto, Calif., assignors to Agmac, Inc., Ripon, Calif.

Filed Aug. 9, 1971, Ser. No. 169,902
Int. Cl. A01g 19/00
U.S. Cl. 56—13.2 13 Claims



This invention pertains to machines for handling nuts and other ground-harvested crops and particularly relates to a windrow leaf scavenger machine which affords airborne separation of leaves from nut-like fruit on the ground.

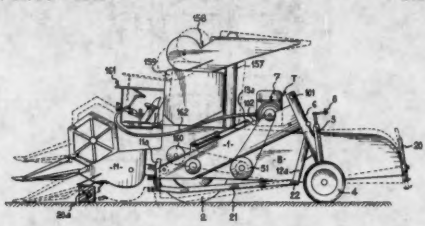
Certain ground-harvested crops including nuts such as pecans and late walnuts are harvested after a hard frost or rain which removes most of the leaves from the trees in the orchard. The harvest then must deal with the desired nuts intermixed with a large quantity of unwanted leaves, twigs and the like. The harvesting procedure entails operation of a windrowing machine in the orchard to arrange all of the nuts and leaves, twigs, etc. into windrows. It has been found that the quantity of leaves and other unwanted materials present in the windrow under such harvest conditions impede the efficient operation of the picker machines commonly employed in sifting the nuts from the large quantity of leaves. It is highly desirable to have available a machine to remove the unwanted leaves etc. from the windrow while leaving the nuts or other ground-harvested crops on the ground arranged in a desirable pattern for harvesting.

3,693,332

SELF-PROPELLED MACHINES FOR FARMING AND ANALOGOUS PURPOSES

Emile Bobard, 17 rue de Reon, Beaune, Cote D'Or, France

Continuation-in-part of Ser. No. 709,756, March 1, 1968, abandoned. This application March 4, 1970, Ser. No. 16,372
Int. Cl. A01d 41/02
U.S. Cl. 56—15.6 7 Claims



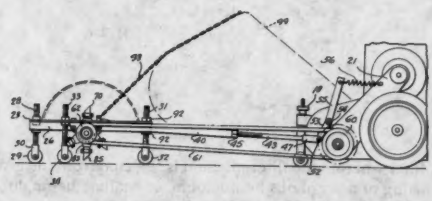
The disclosure of the present invention is a self-propelled composite machine for harvesting cereals, resulting from the incorporation of a harvesting and threshing implement or the like to a self-propelled vehicle having a straddle-type frame and including various harvesting implements permitting of successively farming machines of the type of the composite self-propelled machine. By "incorporation" is here meant a coupled condition of the tractor and implements, such that the implement is directly supported by the tractor, rather than being coupled thereto in trailing relation, so that in such composite machines the implement frame may be, and in fact generally is, entirely wheel-less.

3,693,333

LAWN MOWER VERTICAL CUTTER ATTACHMENT

Forest M. Bishop, 1217 G. W. Highway #76, Richland, Wash.

Filed June 5, 1970, Ser. No. 43,777
Int. Cl. A01d 57/14
U.S. Cl. 56—16.1 4 Claims



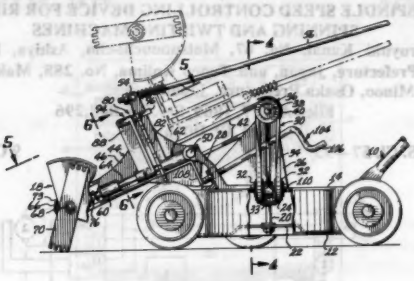
An attachment for a power lawn mower consisting of a wheel-supported frame on which is journaled a transverse shaft carrying a plurality of spaced radially extending saw-cutting blades rotating in longitudinal vertical planes. The frame is attached to a lawn mower and the shaft is drivingly connected by a belt and pulley to the lawn mower reel shaft so as to be driven simultaneously therewith.

3,693,334

LAWN MOWER AND EDGER MECHANISM

James R. Lowery, 2235 East Larkspan Drive, Phoenix, Ariz.

Filed May 24, 1971, Ser. No. 146,177
Int. Cl. A01g 3/06
U.S. Cl. 56—16.9 4 Claims



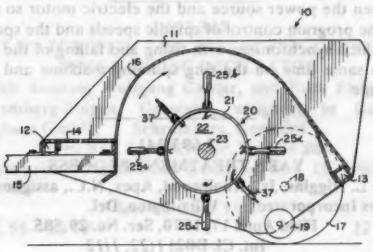
A rotary lawn mower in combination with an edge trimmer is disclosed in which a single power source is employed to drive both mechanisms. The edge trimmer is positioned on the upper surface of the mower housing and is adapted to pivot into a retracted position when not in use so that the mower is able to function in a normal manner.

3,693,335

FLAIL TYPE ROTOR ASSEMBLY AND BLADE FOR SAME

Bernard C. Mathews, P.O. Box 70, Crystal Lake, Ill.

Continuation-in-part of Ser. No. 12,095, Feb. 17, 1970, Pat. No. 3,633,349. This application Jan. 3, 1972, Ser. No. 214,816
Int. Cl. A01d 55/20
U.S. Cl. 56—294 12 Claims



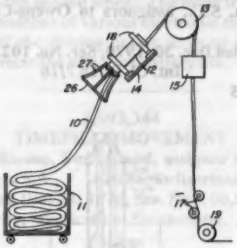
The rotor has four rows of blade mounts on its surface, the rows spaced 90° apart. Each blade mount is a U-shaped metal strip welded to the rotor surface. The blade has a shank and is single side arm, the latter terminating in a laterally disposed cutting edge. The free end of the shank is screw threaded, the shank extending through the blade mount and being confined therein by a lock nut on the screw threaded end. Paddles are also mounted on the rotor in the same fashion and create windage. A link may be interposed between the blade and the blade mount where additional blade movement is desired.

3,693,336

CLOTH DETWISTER APPARATUS

Mariano Bassani, Milan, Italy, assignor to Mount Hope Machinery Company, Taunton, Mass.

Filed April 19, 1971, Ser. No. 135,163
Int. Cl. D06c 3/06
U.S. Cl. 57—1 UN 7 Claims



A detwister apparatus for use in finishing operations on longitudinally travelling cloth or other sheet materials, especially materials such as knit goods which require handling at low levels of tension. The cloth, gathered into a rope-like bundle, is passed through a rotatable tube guide. The entrance end of the guide is fitted with a plurality of smoothly curved protrusions which extend radially inwardly only partially across the entrance, and are circumferentially spaced apart to engage the rope-like bundle lightly. The entrance may further be fitted with a bell mouth frame to guide the cloth bundle smoothly into the guide.

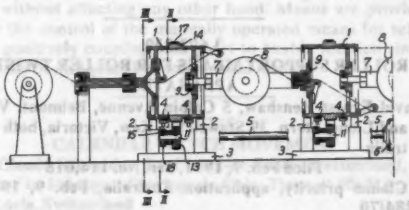
By rotating the guide, the cloth bundle is turned by the protrusions, and is thus twisted or detwisted.

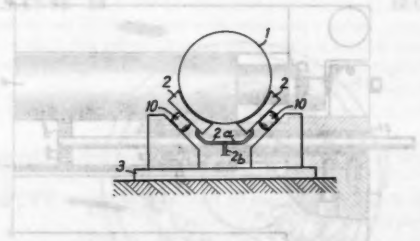
3,693,337

TUBULAR STRANDING MACHINES

Charles M. Fevre, Lyon, France, assignor to Societe Stephanoise De Constructions Mechaniques

Filed April 20, 1971, Ser. No. 135,701
Claims priority, application France, April 21, 1970, 7014459
Int. Cl. D07b 3/12
U.S. Cl. 57—58.32 7 Claims





A tubular stranding machine comprising rotatable tubular sections coaxially arranged and longitudinal spaced to support therebetween cradles carrying wire spools or bobbins. Each tubular section is supported on elastic or resilient bearings and is driven from a common main drive shaft through a secondary drive shaft pivotally supported on the main drive shaft. Transmission belts or gearing connect the main drive shaft and each

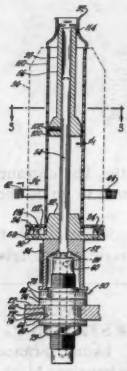
secondary drive shaft, and each secondary drive shaft and its corresponding tubular section.

3,693,338

TWIST FRAME APPARATUS

Cecil R. Cunningham; William R. Beach, and Ray D. Brinkley, all of Aiken, S.C., assignors to Owens-Corning Fiberglas Corporation

Filed Dec. 30, 1970, Ser. No. 102,576
Int. Cl. D01h 7/16
U.S. Cl. 57—75 9 Claims



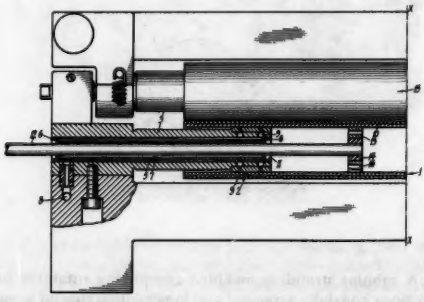
Twist frame apparatus for rotary support and doffing guidance of tubular collectors placed thereon for winding a yarn package; the apparatus including a spindle projecting from a bobbin support for extension within a tubular collector placed thereover and an adapter on the spindle for extension within such tubular collector beyond the zone of collection; the adapter including a laterally extending portion for doffing guidance during removal of such collector from the spindle.

3,693,339

ROLLER SUPPORT MEANS FOR ROLLER TWISTING APPARATUS

David Ernest Henshaw, 5 Calbin Avenue, Belmont, Victoria, and Lionel Stern, 39 Stawell St., Kew, Victoria, both of Australia

Filed Feb. 9, 1971, Ser. No. 114,018
Claims priority, application Australia, Feb. 9, 1970, PA 0284/70
Int. Cl. D01h 7/46
U.S. Cl. 57—77.42 2 Claims



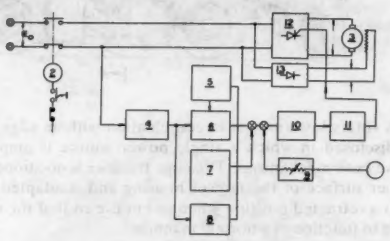
A reciprocating roller twisting mechanism including a hollow cylindrical roller supported internally on a pair of bearing members spaced longitudinally thereof, a rod extending from outside the roller through one of said bearing members into the interior of the roller between the bearing members where it is fastened to the roller by fastening means and means to reciprocate the rod longitudinally and simultaneously to rotate it thereby to impart axial reciprocation and simultaneous rotation of the roller on said bearing members.

3,693,340

SPINDLE SPEED CONTROLLING DEVICE FOR RING SPINNING AND TWISTING MACHINES

Hiroyuki Kanai, No. 67, Matsunouchi-cho, Ashiya, Hyogo Prefecture, Japan, and Tuneo Kojima, No. 288, Makiochi, Minoo, Osaka Prefecture, Japan

Filed Aug. 7, 1969, Ser. No. 848,296
Int. Cl. D01h 1/26
U.S. Cl. 57—93 9 Claims



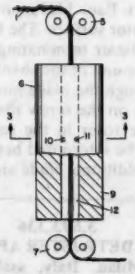
Spindle speed controlling device characterized in that voltages generated at the soft start circuit, the base speed change set circuit to give programmed changes to spindle speed, the speed feedback circuit which maintains the spindle speed at each stage and the chase speed change circuit to give the desired speed changes between the length of chase in synchronization with rising and falling of the ring rails, are combined together. This combined voltage is put as the instructing signal in the revolution controlling part lying between the power source and the electric motor so as to effect the program control of spindle speeds and the speed control which synchronizes with rising and falling of the ring rail at the same time on the ring spinning machine and twisting machine.

3,693,341

YARN TREATMENT PROCESS

Wade L. Higgins, Jr., Knollwood, Apex, N.C., assignor to Hercules Incorporated, Wilmington, Del.

Filed April 17, 1970, Ser. No. 29,585
Int. Cl. D02j 1/22, 1/12
U.S. Cl. 57—157 R 2 Claims



Yarns prepared by a fluid jet bulking technique have been found to contain a large number of loops which interfere with processing when the yarns are tufted into carpets. These loops are removed by subjecting the yarn to a false untwisting operation while under a tension of at least about 0.02 gram per denier.

3,693,342

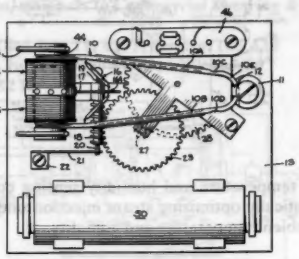
TUNING-FORK TYPE ELECTRONIC CLOCK

Egbert Van Haaften, Closter, N.J., assignor to Bulova Watch Company, Inc., New York, N.Y.

Filed July 8, 1971, Ser. No. 160,835

Int. Cl. G04c *3/00*; H02k *33/00*

U.S. Cl. 58—23 TF 9 Claims



An electronic clock making use of an electromagnetically actuated tuning fork whose vibrations are converted into rotary motion for driving the gear train of the clock by means of a motion transformer including a V-shaped indexing element. The ends of the indexing element are attached to the tines of the fork at corresponding points thereon, and the vertex thereof is flattened to define a rectangular tongue whose edge engages the ratchet teeth of an index wheel whereby as the tines vibrate, the tongue reciprocates in a rectilinear path at right angles to the direction of vibration. The index wheel is joined to a worm gear coupled to the first wheel in the gear train, the worm gear being supported for rotation between a fixed pivot and a spring-biased pivot, whereby sufficient friction is introduced to prevent retrograde motion of the index wheel.

3,693,343

WRIST WATCH WITH A PIEZOELECTRIC CRYSTAL AS TIME-KEEPING OSCILLATOR

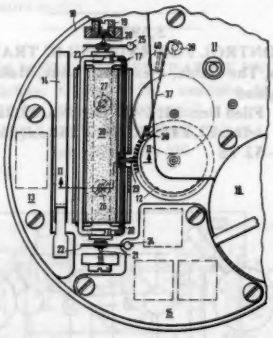
Friedrich Assmus; Wolfgang Ganter, and Hans Flaig, all of Schramberg-Sulgen, Germany, assignors to Gebruder Junghans GmbH, Schramberg, Germany

Filed Nov. 14, 1969, Ser. No. 876,880

Claims priority, application Germany, Nov. 15, 1968, P 18 09 223.452

Int. Cl. G04c *3/02*

U.S. Cl. 58—23 TF 22 Claims



A wrist watch using a piezoelectric crystal as the time-keeping oscillator. The time-keeping oscillator has its output fed to a number of frequency divider stages so as to reduce the ultimate frequency to some low value, e.g., below 5 cps. By reducing the frequency to this low value, the moving device can directly engage the second-wheel thereby minimizing the size and friction losses in the wheel mechanism. Two exemplary moving devices are disclosed, one of which utilizes a rotating coil assembly which has a shift finger to engage the toothing on the second-wheel. The other disclosed example utilizes a driving fork fastened to the shaft of an oscillating magnetic system with the arms of the driving force engaging the toothing on the second wheel. The basic frequency divider also includes a number of various electronic circuits for reducing the width of the driving pulses so as to minimize power losses and maximize the effective battery life.

3,693,344

TIMEPIECE MOVEMENT

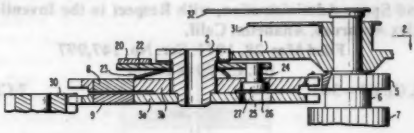
Willy Cleusix, Bienne, Switzerland, assignor to Omega Louis Brandt & Frere S.A., Bienne, Switzerland

Filed Dec. 22, 1970, Ser. No. 100,598

Claims priority, application Switzerland, Jan. 17, 1970, 614/70

Int. Cl. G04b *19/22*, *27/02*

U.S. Cl. 58—42.5 10 Claims



A timepiece movement for driving a plurality of hands, one of which is an hour hand, comprises a power train including a pair of identical, coaxially mounted, independently rotatable gears operatively connected with the hour hand, one of said gears being driven by said power train and the other of said gears being selectively operated manually, with magnetic means normally coupling said gears for simultaneous rotation but permitting adjustment of said manually operable gear relative to the other gear to change the indication of the hour hand without affecting any other hand. Means are provided under the control of the manually operated means for selectively positively coupling said gears to enable rotation simultaneously of said gears by such manual means.

3,693,345

CALENDAR WATCH MOVEMENT

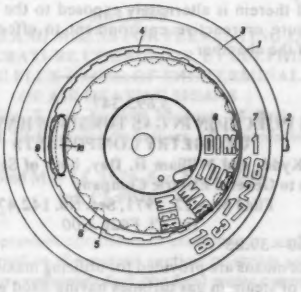
Jean-Claude Schneider, La Chaux-de-Fonds, Switzerland, assignor to Fabrique d'horlogerie Chis. Tissot et fils S.A., LeLocle, Switzerland

Filed Dec. 20, 1971, Ser. No. 209,523

Claims priority, application Switzerland, Dec. 23, 1970, 19139/70

Int. Cl. G04b *19/24*

U.S. Cl. 58—58 10 Claims



A calendar watch movement comprising a date-of-the-month indicator and a day-of-the-week indicator and also a

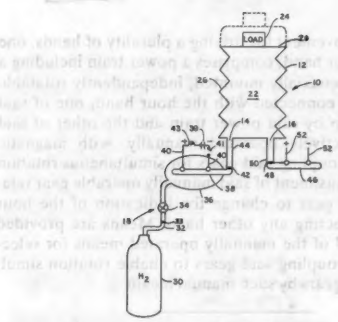
time-setting and rapid correction mechanism. A control stem is radially located with respect to the movement and is capable of assuming several positions along its axis. A clutch pinion is positioned on a square of the stem. There are control components which are capable of moving the clutch pinion along the stem under the influence of the latter's axial displacement between two of said positions, and transmission means for transmitting rotational motion from the clutch pinion to the indicators. The transmission means comprises a transmission pinion coaxial with the stem which, in one of said positions, ensures at least an unidirectional linkage between clutch pinion and date-of-the-month indicator alone and which, in the other of said positions, ensures linkage between the clutch pinion and at least the day-of-the-week indicator. The stem further offers a third axial position in which the clutch pinion, engages the time setting-wheel but does not engage said indicators, and a fourth position in which the clutch pinion also does not actuate said indicators.

3,693,346

GAS OPERATED ACTUATOR

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with Respect to the Invention of Alex Ambruso, Anaheim, Calif.

Filed May 28, 1971, Ser. No. 147,997
Int. Cl. F01k *25/00*
U.S. Cl. 60—36 **7 Claims**



A gas operated actuator including an expansion chamber having an inlet and an outlet containing a membrane or film of material selectively permeable to the drive gas when the membrane is heated. The inlet membrane communicates with a high pressure source of drive gas and the outlet membrane communicates with a low pressure environment or a fluid environment reactive with the drive gas. The actuator is driven by alternately heating the inlet and outlet membranes to affect a cyclical expansion and contraction of the chamber. The actuator may contain a combined inlet-outlet and the membrane contained therein is alternately exposed to the drive gas and low pressure or reactive environment to effect the cyclical motion of the chamber.

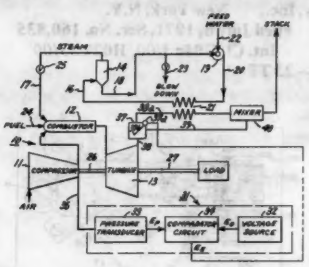
3,693,347

STEAM INJECTION IN GAS TURBINES HAVING FIXED GEOMETRY COMPONENTS

Paul H. Kydd, and William H. Day, both of Scotia, N.Y., assignors to General Electric Company

Filed May 12, 1971, Ser. No. 142,471
Int. Cl. F02g *3/00*
U.S. Cl. 60—39.05 **30 Claims**

Control means are provided for utilizing maximum tolerable amounts of steam in gas turbines having fixed geometry components under various operating conditions. Optional means include: means for automatically holding a constant cycle pressure ratio under all ambient conditions; temperature sensing control means for automatically adjusting steam injection in both low and high temperature ambients to avoid visible plumes and to avoid acid condensation, respectively; or



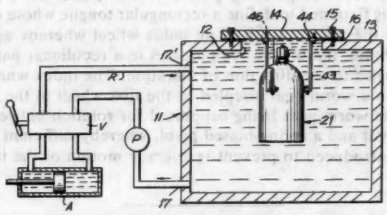
combined temperature and humidity sensing control means for automatically optimizing steam injection under all conditions of ambient temperature and humidity.

3,693,348

VOLUME COMPENSATED HOUSING

Jacques H. Mercier, 49 rue de Naples, Paris, France

Filed Oct. 16, 1970, Ser. No. 81,384
Int. Cl. F15b *1/02*
U.S. Cl. 60—51 **2 Claims**



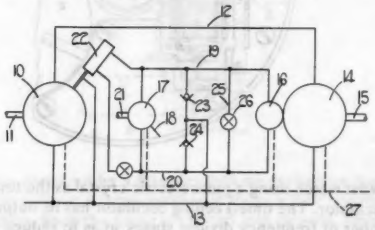
This invention relates to a housing containing oil which has means to compensate for variations in the volume of oil in the housing, such means comprising a cartridge having a rigid shell in which a deformable partition is positioned defining a gas chamber and an oil chamber on opposed sides thereof respectively, the gas chamber being charged through a charging fitting rigidly secured to one end of the shell, with the other end of the shell having a relatively large opening in communication with the housing through a perforated disc extending across the opening, the cartridge being totally immersed in the housing.

3,693,349

SPEED CONTROL FOR HYDRAULIC TRANSMISSION

John Morris, The Gable, Plex Moss Lane, Halsall, near Ormskirk, England

Filed Dec. 11, 1970, Ser. No. 97,222
Int. Cl. F15b *15/18*; F16d *31/06*
U.S. Cl. 60—52 VS **5 Claims**



A speed control for a hydraulic transmission having a pump and motor in series has a pair of pumps in an auxiliary series

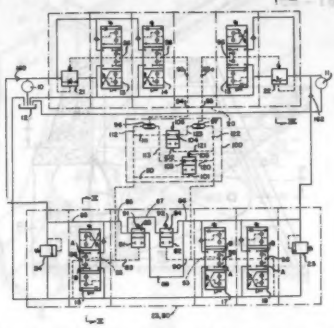
circuit, one of the pair being driven by the motor shaft and the other of the pair being driven at a known reference speed. A pressure difference across the pair of pumps is used to position an actuator which controls the stroke of the motor.

3,693,350

HYDRAULIC CONTROL CIRCUITS AND APPARATUS

John D. Petro, Hubbard, and Robert F. Hodgson, Canfield, both of Ohio, assignors to Commercial Shearing & Stamping Company

Filed Jan. 11, 1971, Ser. No. 105,428
Int. Cl. F15b *11/16, 13/06, 13/09*
U.S. Cl. 60—52 R **6 Claims**



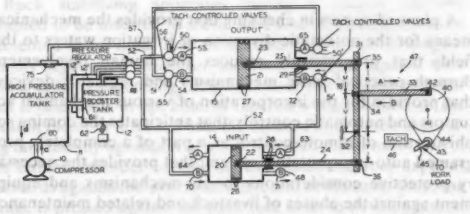
A fluid circuit is provided for operation of multiple motors which comprises a pair of sources of high pressure fluid, two groups of directional control valves, each group containing at least two directional control valves separated by a signal block, each directional control valve operatively connected to deliver fluid to a fluid motor, one of said groups of valves being connected on opposite sides of a first signal block to each of said pumps through a pressure compensating valve, the other of said groups of valves being connected on opposite sides of a second signal block to each of said pumps through a pressure relieved inlet section, said second signal block in said other group including a pair of pressure operated spools regulating the flow of fluid from the two pumps to the directional control valves in said other group whereby the valves on either side of the second signal block can receive fluid from both pumps so long as only valves on one side or the other of the signal block are operative and receive fluid only from one pump at each side of the second block when valves on both sides are operative and shuttle valve means in connections between the signal blocks of each group whereby valves in each group may be simultaneously operated without starving the highest pressure motor.

3,693,351

ANTI-POLLUTION REGENERATIVE ENGINE

Herbert L. Minkus, Chicago, Ill., assignor to Albert M. Sheppard, Chicago, Ill., a part interest

Filed Jan. 29, 1971, Ser. No. 108,064
Int. Cl. F01b *1/00*
U.S. Cl. 60—57 R **11 Claims**



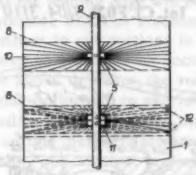
Air motor cylinders are paired, with one cylinder having a greater volume than the other. Lever arms attached to two pistons in these cylinders have a length differential which compensates for the volume differential so that both pistons perform the same amount of work on a load device. Attached to a drive shaft for driving the load device is a tachometer which indicates when the load is applied or removed. When the tachometer indicates that the load has slackened, valves operate so that one of the cylinders ceases to act as a driving force and acts, instead, as a compressor, thereby returning air to a compressed air tank. Thus, during a slack load conditions, the compression cylinder stores energy to drive the system during high load conditions.

3,693,352

METHOD AND APPARATUS FOR COOLING WIDE CONTINUOUS METAL CASTINGS, PARTICULARLY STEEL CASTINGS

Horst Hinze, Duisburg-Serm, and Frantisek J. Jansch, Duisburg, both of Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany

Filed Sept. 22, 1970, Ser. No. 74,330
Int. Cl. B22d *27/04*
U.S. Cl. 62—64 **9 Claims**



A method for cooling wide continuous metal castings uses cooling water jets which impinge on the casting surface in the secondary cooling zone and which are produced with a slanting or arched characteristic. The jets are distributed over the width and length of the casting to form a cohering jet covering the width of the casting and having its greatest cooling power in the longitudinally extending central zone of the casting. The kinetic energy of the cohering jet is controlled to be intentionally smaller in the marginal impinement zones along the casting and, with increasing distance from the casting surface, the kinetic energy is increased, from the margins to the central zone of the casting, in proportion to the quantity of heat to be extracted locally. Apparatus for practicing the method includes spray cone nozzles which are contiguous to each other, and a supply line extending substantially centrally of the casting is adjustable in height during the cooling operation.

3,693,353

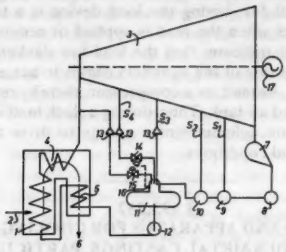
METHOD AND MEANS FOR PREVENTING LOW TEMPERATURE CORROSION, BY SULPHUR CONTAINING FLUE GASES, OF THE TERMINAL PARTS OF AIR HEATING MEANS

Jacques Lemoine, 2, rue Auguste Maguet, 75 Paris 16e, and Paul Lugand, 21 Domaine du Salbert, 60 Cravanche, both of France

Filed May 14, 1970, Ser. No. 37,085
Int. Cl. F01k *7/44*
U.S. Cl. 60—67 **2 Claims**

In order to prevent corrosion of economizers and the like structures carried in the output section of steam generators burning sulphur-containing fuel, the feed water circuit for the steam generator includes the usual heat exchangers followed by a deaerator feeding the economizers and the temperature of the water supplied by the deaerator to the economizers is raised on an adjustable extent above corrosion temperature by

steam extracted from different points of the steam turbine. Gates controlled by the pressure in the deaerator control the



flow of steam out of these different points to ensure the desired pressure and temperature in the deaerator.

3,693,354

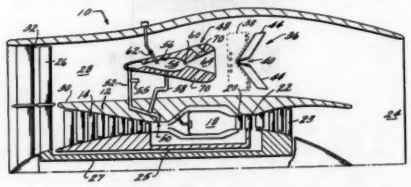
AIRCRAFT ENGINE FAN DUCT BURNER SYSTEM

Thomas Neil Hull, Jr., Marblehead, Mass., assignor to General Electric Company

Filed Jan. 22, 1971, Ser. No. 108,867

Int. Cl. F02k *3/04, 3/10*

U.S. Cl. 60—261 **6 Claims**



A bypass gas turbine engine is provided with an augmentation burner in the bypass airpassage for additional thrust, wherein combustion in the augmentation burner is supported and enhanced by the exhaust from an auxiliary combustor stationed forward of the augmentation burner.

3,693,355

APRON CONSTRUCTION FOR AUTOMATIC WATER GATE

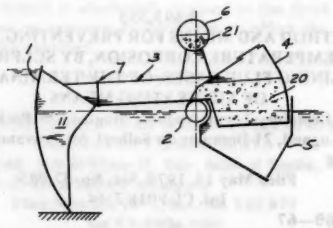
Jacques L. Dubouchet, 427 Weaver St., Larchmont, N.Y.

Filed March 24, 1971, Ser. No. 127,587

Claims priority, application France, March 26, 1970, 7011061

Int. Cl. E02b *7/42*

U.S. Cl. 61—23 **4 Claims**



The apron is made as a separate unit and fixed to the frame by a U-link which is secured to a frame beam by a crosspiece fixedly connected to the upper end of the apron, and by an inverted U-link which is secured to a spaced portion of the frame beam by a second crosspiece fixedly connected to gussets forming part of the apron. Stops are provided to fix the position of the inverted U-link on the frame beam, and shims are utilized with the second crosspiece to effect precise adjustment of the centering of the apron on the axis of rotation of the gate.

3,693,356

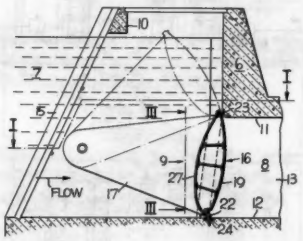
HYDRAULIC TURBINE INLET CONFIGURATION

Howard A. Mayo, Jr., and Edwin W. Murphy, both of York, Pa., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Oct. 19, 1970, Ser. No. 81,862

Int. Cl. E02b *7/40*; **F01b** *25/02*

U.S. Cl. 61—25 **1 Claim**



An intake configuration for a low head hydraulic turbine installation wherein the inlet control gate is positioned upstream from the entrance to the turbine water passageway inlet and is located below the level of the turbine headwater reservoir. The upstream side of the gate body is constructed and arranged to combine with the turbine water passageway inlet to present an efficiently smooth contoured approach for the water into the turbine. When in the open position, the bottom gate seal coacts with the top of the inlet to insure that the water will follow the contoured surface of the upstream side of the gate body.

3,693,357

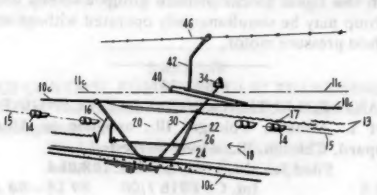
IRRIGATION CONTROL

Ralph E. Shettel, Rte. 1, Twin Falls, Idaho

Filed March 21, 1969, Ser. No. 809,164

Int. Cl. E02b *7/44*

U.S. Cl. 61—29 **15 Claims**



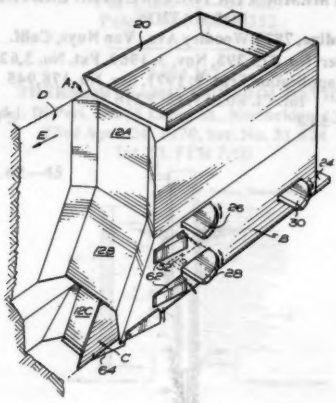
A planned system in checking that provides the mechanical means for the automatic diversion of irrigation waters to the field; that progressively reduces the human involvement through practical basic mechanisms and regulator devices; that provides for the incorporation of various mechanical actuators and automatic controls; that anticipates the coming sophistication of remote control as a part of a completely programed auto-interpretative system; that provides the necessary protective considerations for its mechanisms and equipment against the abuses of livestock and related maintenance practices; that eliminates the problem of check manipulation while solving those of pressure head and seal and surge and flooding.

3,693,358

TRENCH SHORING FRAME

Anthony Ronald Seaton Morrice, 72 Kent Road, Harrogate, England

Filed March 22, 1971, Ser. No. 126,795
Claims priority, application Great Britain, March 25, 1970, 14,464/70
Int. Cl. E21d 7/00
U.S. Cl. 61—41 A 7 Claims



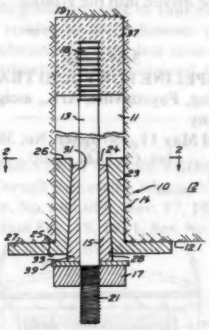
A trench shoring frame comprising side wall structures, a backfill engaging structure connected to the side walls, and independently movable downward sections on each side wall with fluid pressure operated piston and cylinder devices to move these sections.

3,693,359

ROCK STABILIZING APPARATUS

Said M. Karara, Stewart, British Columbia, Canada

Filed Jan. 25, 1971, Ser. No. 109,161
Int. Cl. E21d 21/00
U.S. Cl. 61—45 B 1 Claim



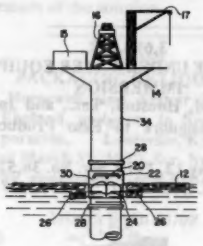
Rock stabilizing apparatus having a tension member adapted to be inserted in a drill hole and being adapted to be cemented at an inner end to the drill hole walls. A longitudinally segmented expansion member having a tapered bore and a radially extending flange fits over the tension member and is insertable in the hole. A tapered wedge slidable of the tension member is forced into the tapered bore of the expanding member by operation of a nut threaded on an outer end of the tension member so that the expansion member expands outwards against the drill hole walls, and at the same time, the flange is pressed against the rock face so as to develop lateral compressive stresses in the rock adjacent the rock face and longitudinal compressive stresses in the rock longitudinally of the tension member.

3,693,360

ICE BREAKER FOR MARINE STRUCTURES

John E. Holder, 503 N. Central Expressway, Richardson, Tex.

Filed Oct. 2, 1970, Ser. No. 77,506
Int. Cl. E02b 15/02; B63b 35/12
U.S. Cl. 61—46 10 Claims



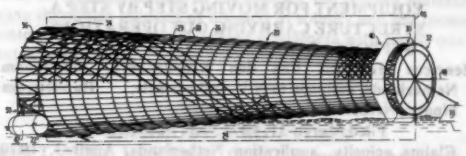
An ice breaker for marine structures comprising a rotatably mounted plow member on an offshore platform and utilizing a vane member to position the plow member in the path of encroaching ice floes. Buoyant chambers vertically position the plow member so that the leading edge will be under or above the ice floe. High pressure fluids or mechanical saws can be used as cutting members to cut sections in the ice floe and allow the plow member to break the ice sections from the ice floe and force them above or below the remaining ice floe. High pressure jets may be located in apertures in the face of the plow member and/or located between the ice floe and the plow member. The cutting members are arranged to cut sections of ice resembling the vertical section of a truncated pyramid.

3,693,361

METHOD AND APPARATUS FOR TRANSPORTING AND LAUNCHING AN OFFSHORE TOWER

Albert M. Koehler, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.

Filed April 20, 1970, Ser. No. 29,831
Int. Cl. E02b 17/00; B63b 35/44
U.S. Cl. 61—46.5 16 Claims



A method and apparatus for transporting an offshore tower to a preselected marine site upon an annular floatation collar encompassingly connected to the upper end of the offshore tower and one or more floatation chambers connected to the outer periphery of the base of the tower. At the preselected site the tower is removed from the base flotation system and pivots about the center of gravity of the offshore tower into a generally vertical posture within the body of water. The annulus is then at least partially ballasted to lower the tower to a position adjacent the bed of the body of water while maintaining the vertical posture of the central axis of the offshore tower with respect to the plane of the surface of the body of water. The tower is then pinned to the bed of the body of water to stably support the tower and retain the vertical orientation thereof with respect to the surface of the body of water, notwithstanding an irregular geography of the bed of the body of water.

In one embodiment the floatation system, connected to the base of the outer periphery of the offshore tower, comprises a pair of floation chambers spaced symmetrically on opposite

sides of a plane intersecting the central axis of the offshore tower and lying normally with the plane of the surface of the body of water. In this embodiment one of the floatation chambers is at least partially flooded to induce a rotation of the offshore tower 130° about its center of gravity prior to releasing the floatation chambers from the base of the offshore tower.

3,693,362

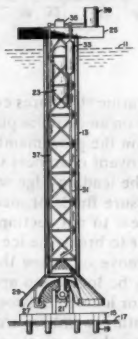
PROTECTION OF UNDERWATER EQUIPMENT BY IMMERSION

Theodore E. Leonard, Houston, Tex., and James R. Lloyd, Houston, Tex., assignors to Esso Production Research Company

Filed May 12, 1970, Ser. No. 36,521

Int. Cl. E02b *17/02*; B63b *21/38*

U.S. Cl. 61—46.5 **6 Claims**



An improvement is disclosed in apparatus of the type including a base anchored to a submerged bottom, an elongated tower provided with a buoyancy chamber near its upper end, and a pivot assembly that connects the tower to the base and permits the tower to sway in response to environmental forces. The improvement resides in a fluid tight, open bottom housing connected to said tower and adapted to enclose the pivot assembly in a bath of a lubricant, regardless of the angle of tower sway.

3,693,363

EQUIPMENT FOR MOVING STEP BY STEP A STRUCTURE CARRYING OUT OPERATIONS SUPPORTED ON A SEA-BED OR THE LIKE

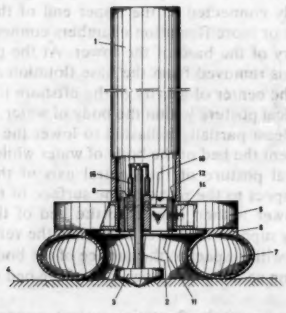
Henricus Hubertus Van den Kroonenberg, Amsterdam, Netherlands, assignor to N.V. Industrieele, Handelscombinatie, Netherlands

Filed March 31, 1971, Ser. No. 129,695

Claims priority, application Netherlands, April 3, 1970, 70/4824

Int. Cl. E02b *17/00*; B63b *21/50, 21/56, 15/00*

U.S. Cl. 61—46.5 **4 Claims**



A mobile marine platform can be supported on as few as three legs, with the legs vertically and horizontally adjustable so as to move the platform laterally, by surrounding each leg with an inflatable ring. When the ring is inflated, the ring supports the load while the leg is raised and laterally shifted and then lowered again, after which the ring is deflated and the load shifts back to the leg.

3,693,364

SONIC METHOD FOR INSTALLING A PILE JACKET, CASING MEMBER OR THE LIKE IN AN EARTHEN FORMATION

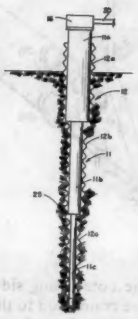
Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif.

Division of Ser. No. 873,298, Nov. 3, 1969, Pat. No. 3,624,760.

This application Sept. 9, 1971, Ser. No. 178,945

Int. Cl. E02d *7/18*; E21b *5/00*

U.S. Cl. 61—53.7 **3 Claims**



A jacket member is placed over a bar which forms a mandrel and is acoustically coupled thereto by means of adjustable couplers at a plurality of points therealong. A sonic oscillator of the orbiting mass type is coupled to the mandrel and driven at a frequency such as to set up resonant standing wave vibration of the mandrel. Sonic energy is thus coupled to the jacket and in turn into the earth formation into which the jacket is to be installed, thereby fluidizing the earthen material and causing the jacket to be driven into the ground.

3,693,365

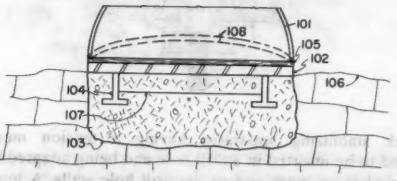
SUBMARINE PIPELINE FOR FLUID TRANSPORTATION

Donald W. Dareing, Fayetteville, Ark., assignor to Cities Service Oil Company

Filed May 11, 1970, Ser. No. 36,242

Int. Cl. F16l *10/00*

U.S. Cl. 61—72.1 **7 Claims**



An inflatable flexible shrouding is affixed to the sea floor by means for weighting the pipeline, such as a metal plate or concrete anchor, to form a submarine pipeline. Under adverse weather conditions the flexible shrouding may be evacuated and collapsed, thus reducing the chances of damage to the pipeline. The composition of the flexible shrouding eliminates corrosion and resists the abrasive effect of ocean floor movement. Pipeline flexibility facilitates the shrouding to be spooled on land and unspooled at sea, appreciably reducing transportation and construction costs.

3,693,366

Patent Not Issued For This Number

ERRATUM

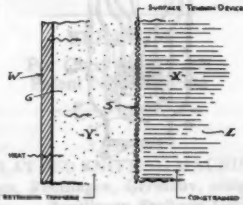
For Class 62—64 see:
Patent No. 3,693,352

3,693,367

THERMODYNAMIC CONTROL DEVICE

Leonard J. Di Peri, 18325 Lahey St., Northridge, Calif.

Filed April 24, 1970, Ser. No. 31,624
Int. Cl. F17c *7/00*
U.S. Cl. 62—45 **13 Claims**



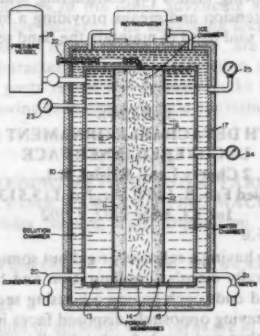
A device for the elimination of heat transfer out of and/or into a body of liquid material, and particularly applicable to cryogens contained at low temperature. Surface tension phenomenon and pressure are employed in establishing a gas barrier between the liquid and the structural container therefor, the pressure being applied to the gas barrier from an external source or accumulated from said liquid as it is liberated from said contained body thereof. The said body of liquid is constrained within the confines of a porous membrane and out of contact with containment walls by means of an intervening body of restraining gas maintained within a range of pressured equilibrium with the pressure prevailing in the constrained liquid and preferably at a pressure equal to or less than the bubble-point pressure of said membrane. Unobvious practicality resides in embodiments of the foregoing concept wherein substantially complete structural isolation of liquid from containment walls is maintained, thereby minimizing heat transfer.

3,693,368

METHOD OF SEPARATING WATER FROM A SOLUTION

Robert D. Miller, Cornell University, Ithaca, N.Y.

Continuation of Ser. No. 684,008, Nov. 17, 1967, abandoned. This application Feb. 19, 1971, Ser. No. 117,096
Int. Cl. B01d *9/04*
U.S. Cl. 62—58 **3 Claims**



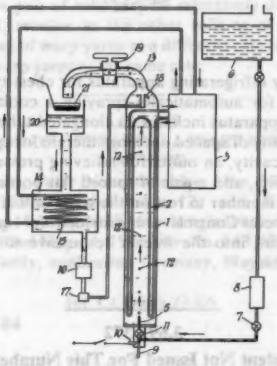
Water is separated from aqueous solutions by maintaining a body of water in the solid phase between two spaced porous phase barriers, maintaining a body of aqueous solution in a supercooled condition in contact with the opposite side of one barrier, maintaining a body of liquid water in a supercooled condition in contact with the opposite side of the other barrier and subjecting the body of the solution to a pressure that exceeds the pressure on the body of liquid water by more than the osmotic pressure of the solution.

3,693,369

PACKAGING OF LIQUIDS

Henry George Horsewell, and Arthur John Terry, both of Hampshire, England, assignors to Brown and Williamson Tobacco Corporation, Louisville, Ky.

Filed March 31, 1970, Ser. No. 22,354
Claims priority, application Great Britain, March 24, 1969, 15318
Int. Cl. B65b *63/08*
U.S. Cl. 62—60 **2 Claims**



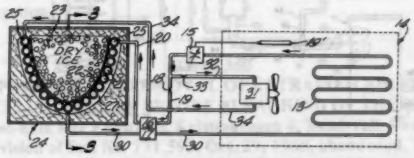
The invention concerns a method for packaging a liquid. The liquid is fed portionwise through cooling means to produce frozen solid entities which are transferred to apparatus which applies a substantially even layer of coating material over the surface of the entities, the coating material being thereafter induced or allowed to solidify and the frozen contents to melt, whereby sealed containers with liquid contents are produced.

3,693,370

THERMODYNAMIC CYCLES

David T. Miller, Long Beach, Calif., assignor to Statham Instruments, Inc., Oxnard, Calif.

Filed Sept. 25, 1970, Ser. No. 75,337
Int. Cl. F25b *25/00*
U.S. Cl. 62—175 **3 Claims**



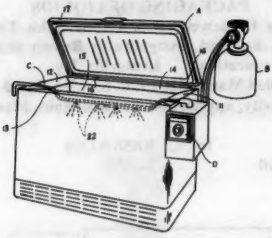
This invention relates to thermodynamic cycles operating between two levels of subatmospheric temperature, whereby power is generated and/or refrigeration obtained, in which a heat transfer liquid is employed having a relatively high vapor pressure at atmospheric temperature.

3,693,371

AUXILIARY REFRIGERATING APPARATUS

Robert E. Clark, West Columbia, S.C., assignor to Revco, Inc., Columbia, S.C.

Filed Jan. 25, 1971, Ser. No. 109,314
Int. Cl. F25b *41/04*
U.S. Cl. 62—222 4 Claims



An auxiliary refrigerating apparatus for chest-type freezers and the like, for automatically spraying a coolant into the freezer. The apparatus includes an elongated tubular member having a plurality of spaced openings therein for spraying coolant within a cavity, an outlet for relieving pressure build-up within the cavity, and a pair of spaced flat portions allowing the elongated member to rest on the walls of the freezer with the door closed. Controls are provided for automatically spraying coolant into the freezer responsive to a predetermined condition.

3,693,372

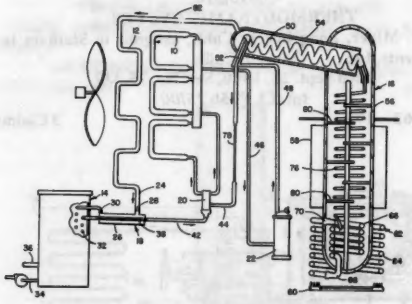
Patent Not Issued For This Number

3,693,373

ABSORPTION REFRIGERATION MACHINE

Gerald K. Gable, 7654 Villa Maria, North Syracuse, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,274
Int. Cl. F25b *15/04*; F22b *1/02*
U.S. Cl. 62—476 3 Claims



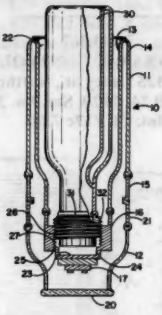
An absorption refrigeration system employing a generator having a heat pipe associated therewith to transfer heat from a suitable burner to the interior of the generator to increase the capacity of the generator without a proportionate increase in the size thereof and to minimize the inside surface temperature of the generator wall.

3,693,374

VARIABLE TEMPERATURE COOLING APPARATUS

Toivo A. Juvonen, Quincy, and Gene A. Robillard, Stoneham, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 18, 1970, Ser. No. 90,725
Int. Cl. F25b *19/00*
U.S. Cl. 62—514 8 Claims



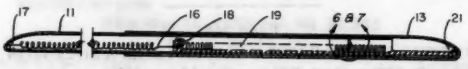
Variable temperature cooling apparatus in which a cooling element and an element to be cooled are provided with interfitting thermally conducting members arranged so that relative movement between the elements varies the area of contact between the members and hence the rate of heat transfer therethrough. Means for accomplishing the relative movement may be incorporated in or independent of the contact area varying arrangement.

3,693,375

WRIST BAND WITH HIGH RESISTANCE TO EXPANSION AND RELATIVELY LOW CONTRACTIVE FORCE

Jens C. Paulsen, 2275 Page Mill Road, Palo Alto, Calif.

Filed Oct. 12, 1971, Ser. No. 188,098
Int. Cl. A44c *5/04*
U.S. Cl. 63—5 R 3 Claims



An expansible wrist band having first and second telescoped sections with spring means for contracting said band on the wrist with low tension and means providing a high resistance to expansion of said band to maintain the band securely on the wrist.

3,693,376

RING WITH DETACHABLE ORNAMENT HAVING UNCOVERED INNER FACE

Robert Willner, 2 Cherry Lane, Bristol, R.I.

Filed Feb. 8, 1971, Ser. No. 113,513
Int. Cl. A44c *9/02*, *17/02*
U.S. Cl. 63—15.6 3 Claims

A finger ring having a relatively rigid but somewhat resilient shank of generally circular configuration and having spaced apart ends, said ends each having a housing secured thereto, said housings having oppositely disposed faces in spaced relation to each other and located substantially exteriorly of the circle defined by the shank, said faces having depressions

therein for snap-receiving an ornamental member therebetween, whereby said ornamental member may be easily assembled and disassembled for purposes of interchangeability.

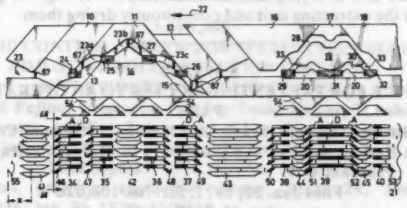
ERRATUM

For Class 64—29 see:
Patent No. 3,693,381

3,693,377
FLAT BED KNITTING MACHINE

Wilhelm Hadam, Reutlingen, Germany, assignor to H. Stoll and Company, Reutlingen, Stollweg, Germany

Filed Jan. 22, 1971, Ser. No. 108,763
Claims priority, application Germany, Jan. 23, 1970, P 20 02 991.8
Int. Cl. D04b 7/00, 7/20
U.S. Cl. 66—75 R 13 Claims



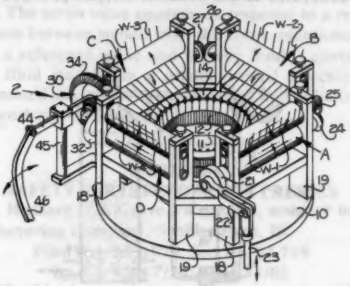
A flat bed knitting machine including jacks mounted in needle tricks in the needle beds and arranged to control movement of the needles. Selector jacks operate the needle-actuating jacks in accordance with the pattern and patterning butts on successive selector jacks are staggered in different planes. Each patterning lock has, for each plane of the patterning butts, adjustable advancing lock parts for selecting jack butts to be acted on and hence to operate the respective needle-actuating jacks. Each advancing lock part is controlled electrically, independently of the other advancing lock part in accordance with the pattern. The advancing lock parts, viewed in the direction of travel of the carriage, are located in advance of a characteristic operating position of the needles. Further lock parts return the selector jacks to the original positions following each characteristic operating position.

3,693,378
YARN FEEDING METHOD AND APPARATUS FOR CIRCULAR WARP KNITTING MACHINES

Federico Sanfeliu Nogues, Calle Diputacion, 68 Barcelona, Spain

Filed Oct. 27, 1970, Ser. No. 84,432
Int. Cl. D04b 25/02
U.S. Cl. 66—81 5 Claims

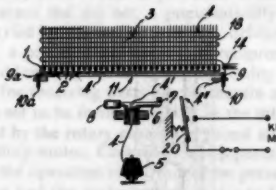
Certain groups of adjacent warp yarns are at times fed to the circular warp knitting machine at a different rate than the remaining groups of warp yarns to thereby vary the length of the stitch loops being formed and to fashion the tubular fabric while it is being knit. Pairs of warp yarn feeding rolls are drivingly interconnected and are arranged around the needle cylinder. One pair of rolls may be selectively driven at a different speed, relative to the other rolls to at times feed a selected group of warp yarns at a different rate and to at times feed all the warp yarns at the same rate.



3,693,379
METHOD OF OPERATING A WARP KNITTING MACHINE

Walter Reiners, Peter Nonnenmuhlen Allee 54; Albert Tho Pesch, Wilhelm-von-Julichstr. 12, and Karl Bungter, Gockelsweg 17, all of 4050 Monchengladbach, Germany

Filed May 14, 1971, Ser. No. 143,489
Claims priority, application Germany, May 16, 1970, P 20 24 088.4
Int. Cl. D04b 23/06
U.S. Cl. 66—84 3 Claims



Method of operating a warp knitting machine includes, after interruption of a weft running to the weft storage and activation of a machine shut-down device, initially controlling slow-down of the knitting instruments of the machine so that when the machine stops, the weft storage has been emptied of all but a predetermined number of weft lengths, severing the drive connection between the weft storage and the knitting instruments, removing from the weft storage the weft remaining therein, automatically filling the weft storage with weft, and the restoring the drive connection for continuing the knitting operation.

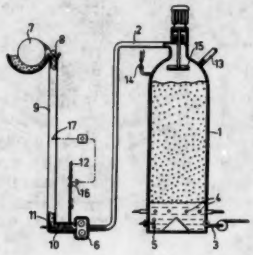
3,693,380
APPARATUS FOR REMOVAL OF ENTRAINED AIR FROM CELLULOSE PULP BEFORE BLEACHING OF THE PULP

Hans-Erik Rye Engstrom, Kristinavagen 4, Sundsvall, Sweden

Division of Ser. No. 771,593, Oct. 29, 1968, abandoned. This application Dec. 17, 1970, Ser. No. 99,309
Claims priority, application Sweden, Nov. 10, 1967, 15463/1967
Int. Cl. D21c 9/10
U.S. Cl. 68—5 C 3 Claims

A down-flow bleaching tower having a space under pressure at the top thereof is provided for bleaching cellulose pulp with

a gaseous bleaching agent. An inlet is provided at the top of the tower for introducing the gaseous agent in the space. A first conduit, having an inlet for pulp containing entrained air, is connected to the inlet of a pump. A second conduit, having an inlet connected to the outlet of the pump, introduces the



pulp to the top of the tower against the pressure of the gaseous bleaching agent. Pressure admitting means is connected to the outlet of the first conduit to force steam, oxygen, or a gaseous bleaching agent counter-current to the pulp to expel and replace at least a portion of the entrained air in the pulp.

3,693,381

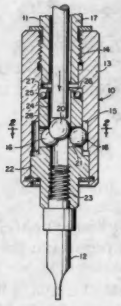
TORQUE RESPONSIVE CLUTCH

Harold E. McGee, Loves Park, Ill., assignor to Hill-Rockford Co., Rockford, Ill.

Division of Ser. No. 829,650, June 2, 1969. This application Feb. 12, 1971, Ser. No. 114,916

Int. Cl. F16d 7/06

U.S. Cl. 64—29 **8 Claims**



This torque responsive clutch involves the use of a larger central steel ball and three slightly smaller steel balls, the central ball being under a predetermined spring pressure toward the other balls to hold them in a drive position in relation to and between driving and driven members, whereby, when sufficient resistance to turning of the driven member occurs, the clutch is automatically released. The three drive transmitting balls operate in radial holes in one of said relatively rotatable members and engage in radial recesses in the other member. A trip rod through which spring pressure is applied to the central ball operates control means to disconnect drive from the driving member. A control lever pivoted at one end has spring pressure applied to the other end and applies increased spring pressure to the trip rod at a point intermediate its ends, the lever in turn controlling a drive means driving the drive member. The clutch was especially designed for driving the bit of power operable screwdriver.

3,693,382

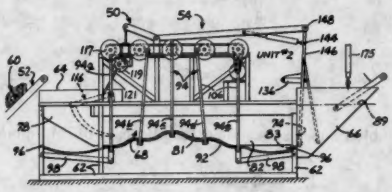
CONTINUOUS WASHING APPARATUS

Frederick W. Grantham, 152 W. Pico Blvd., Los Angeles, Calif.

Filed March 4, 1970, Ser. No. 16,318

Int. Cl. D06f 31/00, 39/00

U.S. Cl. 68—96 **24 Claims**



A washing unit, or a series of similar washing units for different stages of washing such as washing, rinsing, bleaching, etc; each washing unit including a flexible tube containing the water, and the goods are propelled through the tube; the propelling action is produced by a peristaltic action which also produces an agitating and washing action; it also includes a pusher to aid in starting the goods into the tube, and means for removing them from the exit end, such as a conveyor or gripper or both; the apparatus additionally includes an extracting unit continuously receiving the goods from the final washing unit and continuously extracting the water from the goods, and a drying unit continuously receiving the goods from the extracting unit and continuously drying them.

3,693,383

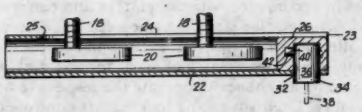
DEVICE FOR PREVENTING ACCESS TO AN OPERATING PART

Ira Krupen, Howard Beach, and Marvin A. Gilman, Croton-on-Hudson, both of N.Y., assignors to Marsal Crafts, Inc., Peekskill, N.Y.

Filed Jan. 20, 1971, Ser. No. 108,026

Int. Cl. F16b 41/00

U.S. Cl. 70—232 **11 Claims**



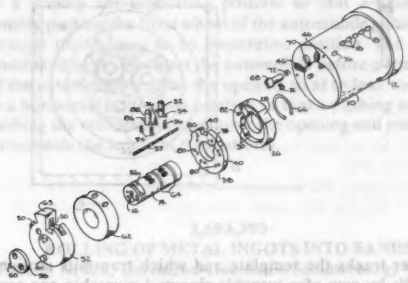
A device for preventing access to an operating part which is fixed to a rotary member of a smaller cross section than the operating part. The device includes an elongated tube having a hollow interior large enough to accommodate the operating part and formed with a slot extending longitudinally along the tube from an open end thereof with this slot having a width great enough to receive a rotary member but too small to permit the operating part to pass through the slot. Thus the tube can be advanced at its slot along the rotary member with the operating part received in the interior of the tube. After the operating part is thus situated within the tube, a plug is inserted into the tube and a releasable lock coacts with the plug and the tube for preventing the plug from being removed so that access to the operating part is prevented as long as the plug remains in the tube.

3,693,384

STEP CAM DISC CYLINDER LOCK

Joseph M. Genakis, 948 W. Boylston St., Worcester, Mass.

Filed Aug. 25, 1970, Ser. No. 66,725
Int. Cl. E05b *15/14, 27/00, 63/00*
U.S. Cl. 70—364 A 5 Claims



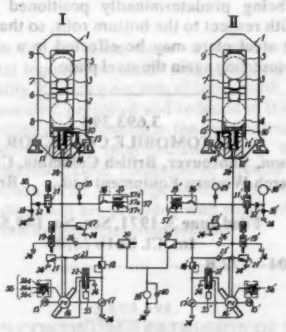
A step cam type of disc lock comprising a series of key-movable step cam discs each having a plurality of step cam surfaces internally thereof, in combination with a like series of setting discs which are actuated by a series of key-activated cam contact pins. The setting discs have notches on the peripheries thereof and when these notches are aligned as by means of a proper key, they provide a common receptacle for a pivoted finger selector bar which then makes a locking engagement with respect to a transmission device which may be connected to the actual locking bolt.

3,693,385

FLUID CONTROL SYSTEM FOR SELECTIVELY SELF-ADJUSTING MILL REDUCTION FORCE OR INTERWORKING ROLL DISTANCE

Kiyoshi Fujino; Shigenobu Otsuka; Tetuo Kaichi; Takaharu Sugiyama, and Koji Tamura, all of Ube, Japan, assignors to Ube Industries Ltd., Yamaguchi-ken, Japan

Filed Sept. 23, 1970, Ser. No. 74,789
Claims priority, application Japan, Sept. 29, 1969, 44/76935; Jan. 30, 1970, 45/8905
Int. Cl. B21b *37/10, 37/08*
U.S. Cl. 72—8 9 Claims



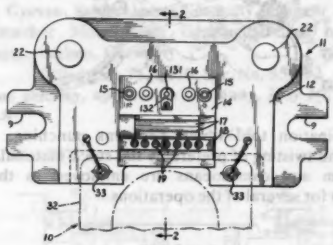
A fluid control system for selectively self-adjusting mill reduction force or inter-working roll distance or roll gap comprising a variable discharging plunger pump having one port connected to a hydraulic cylinder adapted to apply pressure on working rolls in a mill and the other port connected to a fluid supply source. A servo valve is provided for deflecting deflection means in one or the other direction to control the discharge direction and discharge amount of said pump. In order to detect an existing value of mill reduction force, a fluid pressure detector is provided for electrically detecting fluid pressure in a fluid passage adapted to be connected to said hydraulic cylinder. A detector is provided for producing an electrical signal in response to the position of the ram of the cylinder. The servo valve operates in response to a result of a comparison between signals from the above-mentioned detectors and a reference value and thereby fluid is controlled so that the fluid may be in a predetermined direction and a predetermined amount so as to self-adjust mill reduction force or inter-working roll distance.

3,693,386

SAFETY PARTS FEEDER FOR PRESSES

David A. Hedberg, Elk Grove Village, Ill., assignor to Melray Manufacturing Company, Schiller Park, Ill.

Filed Oct. 26, 1970, Ser. No. 83,719
Int. Cl. B21j *7/26;* B21d *43/02*
U.S. Cl. 72—24 10 Claims



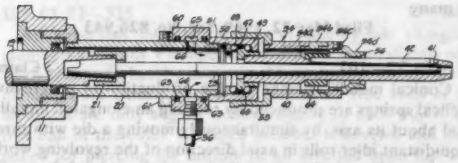
For safely feeding parts to a conventional press having a bed and a manually controlled power operated ram and a die set including a die carried by the bed and a punch carried by the ram, a safety parts feeder is provided. It includes a movable table adjacent the die set, a pneumatically operated rotary motor carried by the bed for rotatably driving and positioning the table, a pneumatically operated reciprocatory motor for raising and lowering the table, and a plurality of jigs carried by the table for receiving parts placed therein and feeding them to the die set to be formed thereby as the table is rotated and positioned by the rotary motor and raised and lowered by the reciprocatory motor. Control means, operated in timed relation with the operation of the ram of the press, controls the rotary motor and the reciprocatory motor to lower the table in one rotary position for forming a part fed by one of the jigs into the die set and for receiving another part in another of the jigs, and to raise, rotate to another position and lower the table and jigs for feeding another part into the die set and for receiving another part to be fed.

3,693,387

AUTOMATIC LUBRICATING AND COOLING DEVICE FOR TUBE EXPANDER

Marvin J. Blackburn, Pasadena, Calif., assignor to Vernon Tool Co., Ltd., Alhambra, Calif.

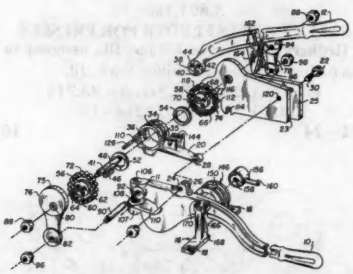
Filed Dec. 14, 1970, Ser. No. 97,570
Int. Cl. B21d *39/10*
U.S. Cl. 72—41 9 Claims



Automatic lubricating and cooling means for tube expanding equipment utilizing compressed air to distribute vapor

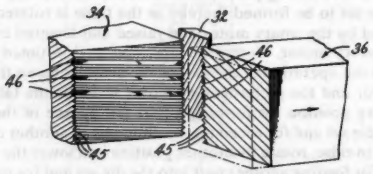
over components of a power operated tube expander and to discontinue the flow as an incident to completion of a rolling cycle.

3,693,388
COMBINATION TOOL
Jacob Yoskowitz, 11 Raynor Road, West Orange, N.J.
Filed March 12, 1970, Ser. No. 18,825
Int. Cl. B21b ; B21d *28/00*
U.S. Cl. 72—70 **6 Claims**



A combination tool which performs punching, cutting, bending, and twisting of preferably flat stock material. An eccentric arm and cam means are employed as the drive mechanism for several of the operations.

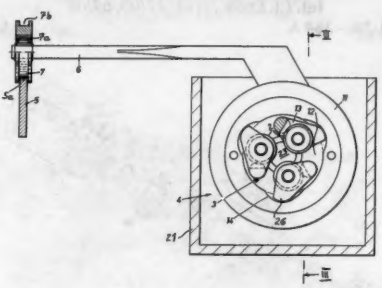
3,693,389
SELF-LOCKING FASTENERS
Howard I. Podell, 6 Dawes Place, Larchmont, N.Y., and Stephen J. Kehoe, Kings Highway, Valley Cottage, N.Y.
Continuation of Ser. No. 842,990, July 18, 1969, abandoned.
This application Aug. 11, 1971, Ser. No. 170,962
Int. Cl. B21h *3/04*; B23g *9/00*; B21d *17/04*
U.S. Cl. 72—88 **2 Claims**



The invention is directed to self-locking screws in which the locking action is produced by at least a part of two adjacent thread convolutions which lean out of normal position toward each other and thereby grip the interposed thread of the mating part.

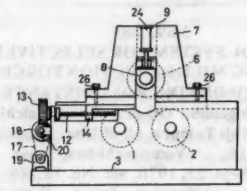
3,693,390
METHOD AND APPARATUS FOR THE PRODUCTION OF ELONGATED CONICAL METALLIC ARTICLES
Otto Oehm, Werdohl, Germany, assignor to Stahlwerke Bruninghaus Gesellschaft Mit, Westhofen/Westfalen, Germany
Filed May 22, 1969, Ser. No. 826,943
Int. Cl. B21d *15/00*
U.S. Cl. 72—107 **3 Claims**

Conical metallic blanks for the production of progressive helical springs are produced by rotating an elongated metallic rod about its axis, by simultaneously moving a die with three equidistant idler rolls in axial direction of the revolving workpiece, and by moving the rolls toward the axis of the workpiece in accordance with a predetermined pattern so that the rolls convert the workpiece into a blank which tapers from one end toward the other end, either gradually or stepwise. The means for moving the rolls toward the axis of the workpiece comprises a fixed template and a scanning arm whose



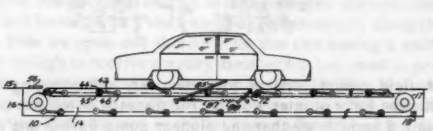
follower tracks the template and which transmits motion to the rolls by way of a turnable ring and pivotable one-armed levers.

3,693,391
STEEL PLATE BENDING APPARATUS
Masunori Mori, 116 Nozaki, Wakayama-shi, Wakayama-ken, Japan
Filed June 3, 1971, Ser. No. 149,440
Int. Cl. B21d *5/14*
U.S. Cl. 72—173 **3 Claims**



A steel plate bending apparatus so constructed that, when an end bending of the steel plate is required, the steel plate is inserted between an upper roll and a pair of lower rolls, the top roll being predeterminedly positioned in a movable manner with respect to the bottom rolls, so that the end bending of the steel plate may be effected in a single operation without reinserting again the steel plate.

3,693,392
AUTOMOBILE CONVEYOR
John Watson, Vancouver, British Columbia, Canada, assignor to Monarch Western Equipment Ltd., British Columbia, Canada
Filed June 3, 1971, Ser. No. 149,525
Int. Cl. B61b *13/00*
U.S. Cl. 104—172 B **4 Claims**



Automobile conveyor apparatus having a continuous chain running beneath a slotted car supporting platform, the chain having pushing assemblies mounted at spaced intervals thereon normally passing beneath the platform and selectively

movable on passage of a front wheel and rear wheel of the automobile over an advance end of the platform to a tire engaging position supported on top of the platform. A ramp, spring urged to, and releasibly locked in, a horizontal supporting position at an opening in the platform spaced from the advance end thereof a distance a little greater than a car length is released by operation of a lever disposed in the path of an automobile approaching the opening to permit the ramp to swing to a sloping non-supporting position so that a pushing assembly pushing the front wheel of the automobile can descend through the opening to an inoperative position. The lever is positioned so that it clears the automobile before a rear wheel of the automobile reaches the opening so as to lock the ramps in a horizontal supporting position so that a pushing assembly pushing the rear wheel passes over the opening and pushes the automobile the length of the platform.

3,693,393

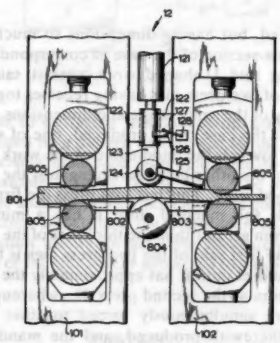
ROLLING OF METAL INGOTS INTO BANDS

Wilhelm Nellen, Dortmund-Hoechsten/Sommerberg; Theodor Sevenich, and Hans Wladika, both of Dortmund, all of Germany, assignors to Hoesch Aktiengesellschaft, Dortmund, Germany

Filed June 25, 1970, Ser. No. 49,852

Int. Cl. B21b *39/00*

U.S. Cl. 72—226 **6 Claims**



In a process for the continuous or semi-continuous hot rolling of metal ingots into bands with a high specific band weight, especially 30–40 kg per mm of band width, the material is heated, descaled, prerolled and reduced in thickness during the final rolling under tension in the longitudinal direction. During prerolling and/or intermediate rolling, the ingot is reduced in thickness under compressive stresses in the longitudinal direction. The pre-stage and/or the intermediate stage of the rolling mill are provided with roller controls such as to produce this longitudinal compression.

3,693,394

PROCESS IN CONTINUOUS EXTRUSION OF METALS AND THE LIKE

Agar Evald Runevall, Tranvagen 67, Segeltorp, and Bror Hansson, Karlavagen 97, Stockholm, both of Sweden

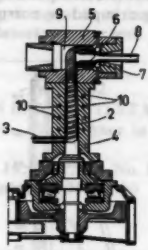
Filed Nov. 12, 1970, Ser. No. 88,707

Claims priority, application Sweden, Nov. 17, 1969, 15710/69

Int. Cl. B21c *29/00*

U.S. Cl. 72—262 **5 Claims**

Metal and the like is extruded by means of a screw press including a power zone and extrusion die means. On leaving the



power zone, the metal is heated to facilitate its passage from the screw to and through the die means.

3,693,395

RECIPROCATING CARRIAGE DRAWING MACHINE

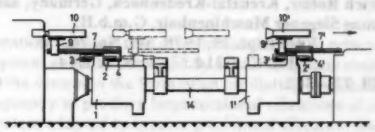
Johann Greven, Schleckheim, Germany, assignor to Schumag Schumacker Metallwerke Gesellschaft mit beschrankter Haftung, Aachen, Germany

Filed July 15, 1970, Ser. No. 55,092

Claims priority, application Germany, July 16, 1969, P 19 36 139.8

Int. Cl. B21c *1/28*

U.S. Cl. 72—287 **10 Claims**



Reciprocating carriage drawing machine includes first guideways extending in a given drawing direction, a drawing carriage reciprocably mounted in the guideways, revolving cam means operatively connected to the drawing carriage for reciprocating the same along the first guideways, an intermediate carriage interposed between the drawing carriage and the cam means for lengthening the stroke of the drawing carriage, the intermediate carriage being also operatively connected to the cam means and being similarly reciprocable thereby in second guideways in the given drawing direction, and step-up transmission means for increasing the length of stroke of the drawing carriage comprising at least one axle carried by the intermediate carriage and extending substantially perpendicularly to the given drawing direction, a pinion loosely mounted on the axle and being in meshing engagement at one side thereof with a stationary rack and on the other side thereof with a rack slidable in third guideways paralled to the drawing direction, the slidable rack being coupled to the drawing carriage.

3,693,396

APPARATUS FOR CREASING AND TAPERING USED METAL CONTAINERS

Richard E. Bertelson, 137 Washington St., Marblehead, Mass., and Robert W. Mezitt, Frankland St., Hopkinton, Mass.

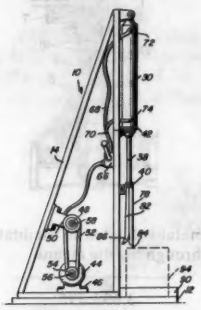
Filed April 14, 1971, Ser. No. 133,903

Int. Cl. B21d *28/32*

U.S. Cl. 72—325 **11 Claims**

An apparatus including a pair of side-by-side elongated members generally V-shaped in cross-section and slightly relatively inclined whereby one pair of base ends of the elongated members are closely nested and the other free ends of the members are only slightly nested relative to each other. The free end of the outer V-shaped member is beveled and sharpened for piercing the bottom of an inverted open top container immediately inwardly of one peripheral portion of the bottom wall and continued downward movement of the elon-

gated members after piercing the bottom wall results in the side wall portions of the corresponding peripheral portion of the container being crimped or corrugated with upstanding



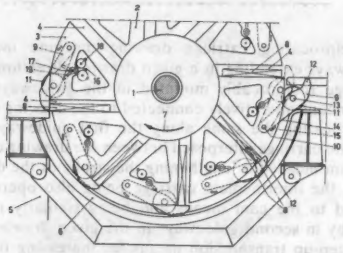
corrugations whose ends adjacent the bottom of the inverted container are more sharply crimped or corrugated, the corrugated portions of the container being wedged between the confronting surfaces of the V-shaped elongated members.

3,693,397

SPOKED WHEEL CONVEYING DEVICE

Friedrich Rotter, Kreuztal-Kredenbach, Germany, assignor to Siemag Siegener Maschinenbair, G.m.b.H.

Filed Sept. 29, 1970, Ser. No. 76,355
Int. Cl. B21d *37/16*; B21c *1/14*
U.S. Cl. 72—342 **6 Claims**



The disclosure of this invention relates to a spoked wheel conveying device for the conveyance of rolled stock, for instance, hot metallic rolled slabs, through a cooling bath. The slabs are inserted into the gaps or openings formed by the spokes and rest on end bars whenever they pass through the lower part of their path of motion. These end bars are, on one hand, hinged in the direction of rotation of the spoked wheel and have portions that extend in front of an adjacent spoke gap that serves to close the gap and are, on the other hand, supported on circular rails by rollers when in the position where they close the open ends of the wheel.

3,693,398

METHOD FOR PRODUCING CASES HAVING ROUNDED SIDES AND BEING OPEN AT BOTH ENDS

Johannes Sigurd Pedersen, Aabyhoj, Denmark, assignor to Aarhus Metalemballage Industri, Aabyhoj, Denmark

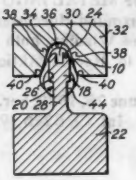
Filed May 26, 1970, Ser. No. 40,662
Claims priority, application Denmark, May 27, 1969, 2847/69
Int. Cl. B21d *51/10*
U.S. Cl. 72—368 **8 Claims**

A method of producing metal cases having opposite rounded sides, preferably being of circular cylindrical shape, and being open at both ends, from a blank consisting of a rectangular piece of sheet metal, said method comprising the steps of

I. bending each border of said blank to form a border zone of approximately the shape of a circular arch of an angle of between 75° and 120°, preferably about 90°, and having a radius of curvature smaller than, preferably between 20 and 40 percent smaller than the radius of curvature of the rounded side of the case to be provided by said border zones,

II. bending the work obtained by step I at its middle line into U-shape with the two curved border zones facing each other and with the bottom of the U forming approximately a circular arch of an angle of between 125° and 175° and having a radius of curvature smaller than, preferably 20 to 40 percent smaller than the radius of the rounded side of the case to be provided at the middle zone of the blank, and

III. arranging the U-shaped work thus obtained on a mandrel having the same cross-section as the case to be



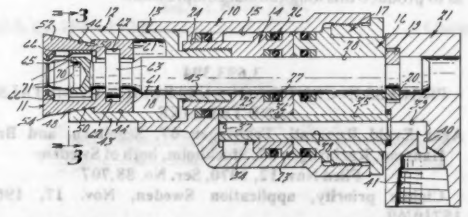
produced, but having dimensions so much smaller than the cross-section of the case as corresponding to slide fit, pressing said U-shaped work against said mandrel by means of two press dies having recesses together defining a cavity of the same shape and dimensions as the external sides of the case to be produced, one of said dies being forced towards the middle line of the work symmetrically thereto, the other being forced against the borders of the U-shaped work. This last said press die first being forced towards the mandrel until it has a minimal distance therefrom greater than the thickness of the original blank, then the first said of the two press dies is forced towards the mandrel until it has approximately the same distance therefrom as the second press die, whereupon both press dies are simultaneously forced together enclosing the case, therewith produced, and the mandrel, thereby a case being obtained having longitudinal edges directly contacting each other with a not unessential pressure and without the borders overlapping each other.

3,693,399

FASTENER INSTALLATION AND CRIMPING TOOL

Peter R. Chirco, Utica, Mich., assignor to Huck Manufacturing Company

Continuation of Ser. No. 708,713, Feb. 27, 1968, abandoned. This application Nov. 2, 1970, Ser. No. 76,841
Int. Cl. B21d *9/05*
U.S. Cl. 72—391 **13 Claims**



An installation tool for applying fasteners which comprise a bolt and a collar or nut in which a radially directed crimping force is applied to the nut substantially therearound, after the

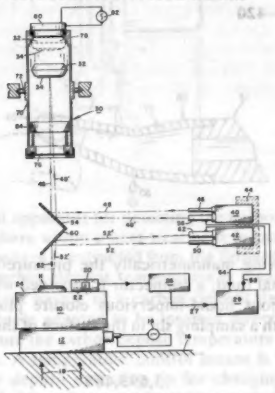
nut is first threaded on the bolt, to effect an elongation of the nut and into which the crimping force is applied by a plurality of separate crimping jaws constructed so that a relatively short tool with an offset or eccentric crimping nose is provided for clearance applications and reduction in weight.

3,693,400

METHOD FOR MEASURING THE CHARACTERISTICS OF MECHANICAL-TO-ELECTRICAL TRANSDUCERS

Carl H. Savit, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.

Filed May 20, 1970, Ser. No. 39,114
Int. Cl. G04r *29/00*
U.S. Cl. 73—1 DV **14 Claims**



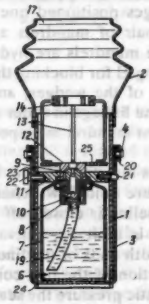
A transducer to be tested is mounted on a shaking table which is energized by a desired driving test signal. The table's motion is precisely measured with reference to an inertial system, for example, a freely falling body. The precise measurement of the shaking table's movements is correlated with the electric output signal from the transducer, and the result of this correlation allows an accurate measurement of the characteristics of the transducer subjected to vibrations by the shaking table.

3,693,401

APPARATUS FOR CHECKING OPERATION OF SMOKE DETECTORS

Gustav Purt, Rapperswil; Walter Bosshard, Stafa, and Gerhard Meier, Meilen, all of Switzerland, assignors to Cerberus AG, Mannedorf, Switzerland

Filed Nov. 13, 1970, Ser. No. 89,176
Claims priority, application Switzerland, Nov. 14, 1969, 17011/69
Int. Cl. G08b *13/18, 27/00*
U.S. Cl. 73—1 R **13 Claims**



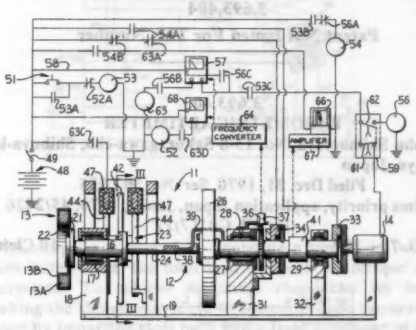
A testing device for smoke detectors wherein a housing is placed over the detector under test and a test medium is sprayed into the housing. The smoke detector responds to the test medium to indicate operability thereof. The internal volume of the housing is equal to at least twice the internal volume of the smoke detector under test.

3,693,402

VIBRATION DAMPER TEST MACHINE

Nelson A. Jones, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed July 19, 1971, Ser. No. 163,647
Int. Cl. G01m *7/00*
U.S. Cl. 73—11 **12 Claims**



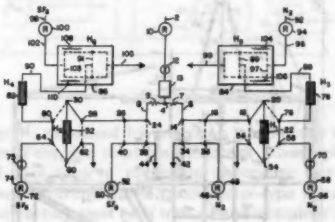
A vibration damper test machine including a rotary mass elastic system and characterized by electromagnetic means for exciting the system in the form of an oscillating torque of resonant frequency to produce large torsional vibrations at an end of the system adapted to receive a torsional vibration damper. The electromagnetic excitation means is arranged such that an excitation frequency corresponding to a predetermined order of vibration and an excitation torque corresponding to the order of vibration amplitude can be induced into the mass elastic system to simulate conditions existing in a particular engine. An observed excessive amount of strain on the system at resonance provides an indication of malfunction of the damper.

3,693,403

GAS ANALYSIS APPARATUS AND METHOD USING PARALLEL GAS DENSITY DETECTORS AND DIFFERENT CARRIER GASES TO DETERMINE MOLECULAR WEIGHT

Donald G. Paul, Kennett Square, Pa., assignor to Chemalytics Corporation, Unionville, Pa.

Filed Nov. 9, 1970, Ser. No. 87,680
Int. Cl. G01n *9/00, 31/08*
U.S. Cl. 73—30 **13 Claims**



A method and apparatus are provided for measurement of a function of the molecular weight of a volatile chemical compound of a sample and the absolute weight contained therein by dividing a flow of volatilized sample into a plurality of portions having a fixed volume proportion to each other, trapping the chemical compound from each of said portions separately

in trapping means, transferring the chemical compound of each of said portions into different carrier gases, said carrier gases differing in molecular weight from each other and from the chemical compound of the sample to form separate flows and passing the separate flows through separate means of the recording gas density cell type whereby signal outputs are obtained, the ratio of any two signal outputs being a function of the molecular weight of the compound, the means for trapping of the chemical compound to be measured preferably including a chromatographic tube when more than a single component is present.

3,693,404

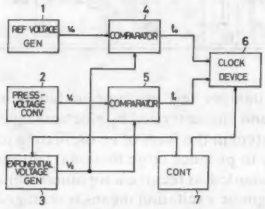
Patent Not Issued For This Number

3,693,405

BAROMETRIC ALTIMETER

Naonobu Shimomura, No. 13-8 Sakuragawa-cho, Shibuya-ku, Tokyo, Japan

Filed Dec. 31, 1970, Ser. No. 103,055
Claims priority, application Japan, Jan. 7, 1970, 45/2426
Int. Cl. G01l *7/12*
U.S. Cl. 73—384 **10 Claims**



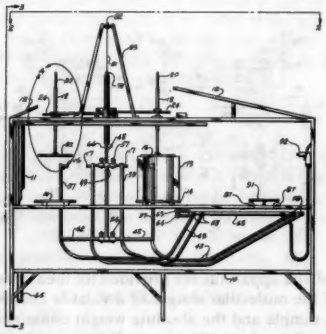
An exponentially changing voltage is compared respectively with a voltage proportional to the atmospheric pressure at a reference altitude and a voltage proportional to the atmospheric pressure at the altitude to be measured and their respective times of equality are measured. The altitude can then be obtained by the time interval because the time interval is shown to be proportional to the difference between the altitude to be measured and the reference altitude.

3,693,406

METHOD FOR INSPECTING FILTERS

Benjamin F. Tobin, III, Los Altos, Calif., assignor to Air Intake Renu, Montebello, Calif.

Division of Ser. No. 5,546, Jan. 26, 1970. This application Jan. 20, 1971, Ser. No. 108,139
Int. Cl. G01m *3/00*; G01n *15/08*
U.S. Cl. 73—38 **5 Claims**



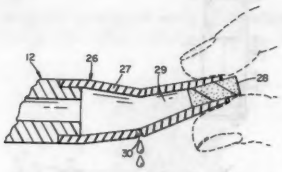
Method and apparatus are described for washing hollow cylindrical engine air cleaners or filter elements on inside and outside surfaces. After the washing operation and before drying the filters are inspected by directing a forceful flow of water heavily aerated with entrained bubbles of air against the filter surface. Visual observation of bubbles passing through the filter element provides rapid and reliable detection of leaks through the filter.

3,693,407

VENTED SAMPLING DEVICE

Daniel M. McWhorter, Arlington Heights, and Frank K. Villari, Oak Park, both of Ill., assignors to The Kendall Company, Boston, Mass.

Filed July 1, 1971, Ser. No. 165,846
Int. Cl. G01l *19/00*; A61b *5/00*
U.S. Cl. 73—420 **9 Claims**



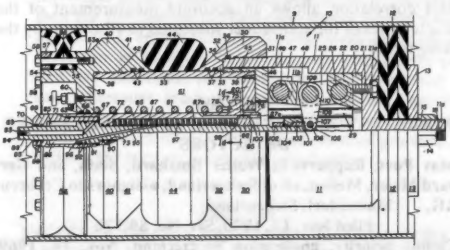
In measuring manometrically the pressure of body fluids such as spinal fluid, a connector is provided which comprises an air-pervious liquid-impervious closure plug at one end, together with a sampling slit in the surface of the connector.

3,693,408

PIPELINE TESTING PLUG

Walter E. Hyde, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Nov. 20, 1970, Ser. No. 91,450
Int. Cl. G01m *3/28*
U.S. Cl. 73—49.8 **21 Claims**



A pipeline testing plug with a cylindrical body has scraper cups attached to it, resilient packer ring positioned on the body, a pair of wedges positioned one on each side of the packer ring and a pair of mandrels and jackknife linkage within the body. The mandrels are hydrostatically operated, with the linkage arranged for blocking the first mandrel which is connected to one of the wedges, and the other mandrel being connected to the linkage in order to remove the linkage from blocking the first mandrel in response to applied hydrostatic pressure.

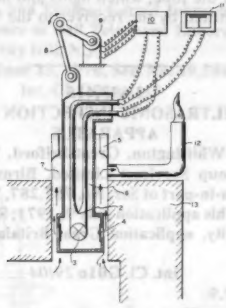
The pipeline plug is inserted into the line and pushed down the line by low-pressure fluid flow. After the plug reaches the desired area, the pipeline is closed off at opposite ends and hydrostatic pressure is built up, activating the plug sealing means. Pressure at both ends of the line is then monitored to determine which section of the line contains the leak. Upon reduction of hydrostatic pressure the sealing means in the plug automatically releases, allowing the plug to be moved to a new position, thereby further narrowing the area in which the leak could be located.

3,693,409

METHOD AND APPARATUS FOR MEASURING THE CARBON POTENTIAL IN GAS ATMOSPHERES

Kazuo Yamagishi, Urawa, Japan, assignor to Tokyo Gas Company Limited, Tokyo, Japan

Filed Oct. 12, 1970, Ser. No. 79,872
Int. Cl. G01n 25/02
U.S. Cl. 73—25 2 Claims



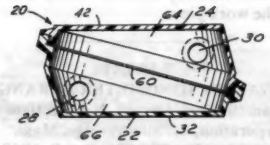
A method and apparatus for detecting the carbon potential of a gas atmosphere within a heat-treatment furnace. A sample of gas atmosphere is extracted from the furnace and while cooling it the carbon deposit temperature is measured by a measuring element having of a carbon deposit detecting tip and a thermocouple adapted to be inserted directly into the furnace to measure the carbon deposit temperature of the said gas atmosphere. A temperature control means is connected with the carbon deposit detecting tip for changing the temperature of said tip, and a recorder is connected with said thermocouple for recording the temperature at which the tip detects a carbon deposit. The internal temperature of the furnace is measured, and the thus measured temperature values are used to determine the carbon potential.

3,693,410

DISPOSABLE AIR SAMPLING FILTER CASSETTE

Charles J. Robrecht, and John S. Wyman, Jr., both of Ann Arbor, Mich., assignors to The Bendix Corporation

Filed Feb. 2, 1970, Ser. No. 7,458
Int. Cl. G01n 31/00; B01d 49/00
U.S. Cl. 73—28 7 Claims



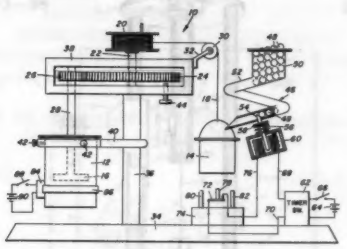
A composite filter unit and cassette to serve as an air sampler for personal use in connection with a metering pump and a cyclone unit. The filter unit is formed of two opposed shells with interfitting flanges to provide a support for the circumferential edges of a filter disc and to form chambers on each side of the disc, one to serve as an inlet and one to serve as an outlet. The chambers are provided with tangential openings so that inlet air is directed parallel to the disc in a toroidal path where it can flow uniformly through the filter disc to the opposed chamber and outlet. The composite filter unit is encapsulated in a cassette during use to protect it against outside contamination, the encapsulator having a special configuration for cooperation with a garment support bracket.

3,693,411

APPARATUS FOR MEASURING THIXOTROPY

George L. Kalousek, 2395 Urban Drive, Lakewood, Colo., and Phillip F. Enger, Arvada, Colo.

Filed March 18, 1971, Ser. No. 125,651
Int. Cl. G01n 11/10
U.S. Cl. 73—59 5 Claims



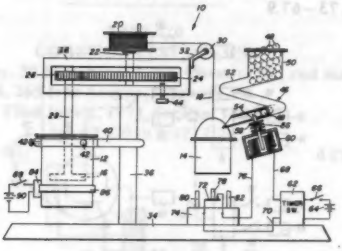
Thixotropy is measured by analyzing a sample in two different states. First, the total load to break thixotropic set is determined. To achieve maximum rheopectic set before breaking the thixotropic set, a viscosimeter-type apparatus is loaded by impacting steel balls into a fixed container at regular intervals. Second, the minimum load to initiate flow is determined by vibrating the sample to break thixotropic set, while simultaneously loading a fixed container in the above manner. The two tests provide values for (1) the total load to shear the set sample, and (2) the minimum load to initiate flow. Algebraically, these values are combined into a thixotropic index.

3,693,412

METHOD FOR MEASURING THIXOTROPY

George L. Kalousek, 2395 Urban Dr., Lakewood, Colo.

Filed March 18, 1971, Ser. No. 125,649
Int. Cl. G01n 11/10
U.S. Cl. 73—59 2 Claims



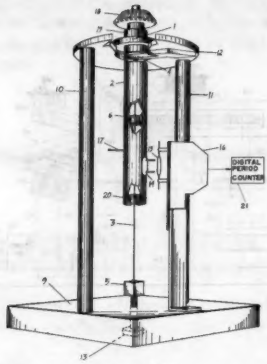
Thixotropy is measured by analyzing a sample in two different states. First, the total load to break thixotropic set is determined. To achieve maximum rheopectic set before breaking the thixotropic set, a viscosimeter-type apparatus is loaded by impacting steel balls into a fixed container at regular intervals. Second, the minimum load to initiate flow is determined by vibrating the sample to break thixotropic set, while simultaneously loading a fixed container in the above manner. The two tests provide values for (1) the total load to shear the set sample, and (2) the minimum load to initiate flow. Algebraically, these values are combined into a thixotropic index.

3,693,413

MOMENT OF INERTIA MEASURING INSTRUMENT

Richard Studley Boynton, 81 Hillcrest Terrace, Meriden, Conn.

Filed Feb. 2, 1971, Ser. No. 111,979
Int. Cl. G01m 1/10
U.S. Cl. 73—65 5 Claims



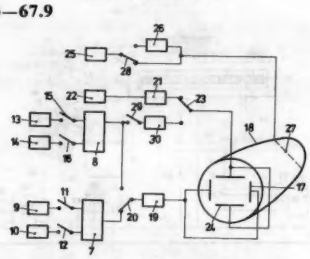
An inverted torsion pendulum which may be used to measure the moment of inertia of physical parts of any size or shape. In one preferred embodiment, a taut wire is placed in tension in a rigid fixed frame. A test object is attached to an object mounting surface located above the fixed frame and concentric with the longitudinal axis of the taut wire. A rigid support structure couples this object mounting surface to the center of the taut wire. Bearings limit the motion of the oscillating assembly to pure rotation. The period of oscillation of the torsion pendulum is determined with a magnetic reed switch and electronic period counter and the moment of inertia of the test object calculated using conventional methods.

3,693,414

ULTRASONIC IMAGE PRODUCING INSTRUMENT

Richard Ernest Soldner, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed May 8, 1970, Ser. No. 35,740
Claims priority, application Germany, June 4, 1969, P 19 28 367.1
Int. Cl. G01n 29/04
U.S. Cl. 73—67.9 2 Claims



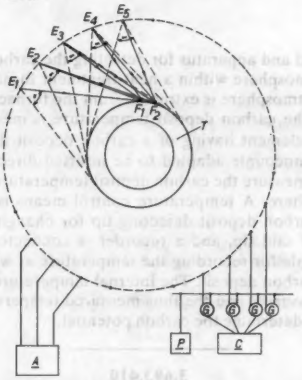
An ultrasonic image producing instrument of the impulse echo type is used for making visible sections of an object being examined, particularly inner organs in the body of a patient. The instrument has an ultrasonic emitting and receiving system, the emitter of which sends an ultrasonic ray into the object being examined and the receiver of which receives echo impulses reflected from various limiting surfaces of the object. The instrument also has drives for shifting the system relatively to the object being examined, namely, by shifting the ultrasonic ray line by line selectively in one plane or in a plane perpendicular thereto while the ray direction always remains the same. The instrument also has an oscillograph tube having an electron ray which is deviated by a vertical sweep generator synchronized with the ultrasonic emitter in a vertical direction with a speed proportional to the duration of the emitted impulse in the object being examined and deviated by a horizontal sweep generator capable of being synchronized with the drives in the horizontal direction with a speed proportional to the shifting speed of the ultrasonic ray in the respective plane, the deviation taking place over the image screen of the tube, which lights and measures the echo impulses transmitted by the receiver to the Wehnelt cylinder of the tube.

3,693,415

SCANNING ULTRASONIC INSPECTION METHOD AND APPARATUS

Keith Richard Whittington, Greatshelford, England, assignor to T. I. (Group Services) Limited, Birmingham, England

Continuation-in-part of Ser. No. 787,287, Nov. 26, 1968, abandoned. This application July 9, 1971, Ser. No. 161,079
Claims priority, application Great Britain, Nov. 29, 1967, 54,224/67
Int. Cl. G01n 29/04
U.S. Cl. 73—67.9 42 Claims



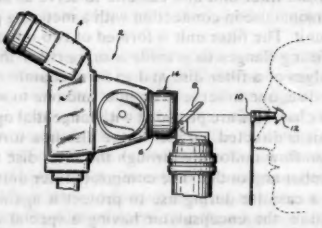
A method and apparatus for testing for flaws by ultrasonic energy in which transducer elements are uniformly spaced in a row relative to a work piece and successive groups thereof are energized in a progressive manner along the row, each group being energized in the same manner so that successive foci are on a path on the outer surface of the work piece. Preferably, each transducer element emits a pulse of ultrasonic energy throughout a substantial angle towards the work piece and the pulses arrive substantially simultaneously and in phase at a point within the work piece.

3,693,416

APPLANATION TONOMETER ARRANGEMENT

Joseph C. Dianetti, East Aurora, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Continuation of Ser. No. 789,790, Oct. 8, 1969, abandoned. This application Nov. 25, 1970, Ser. No. 92,852
Int. Cl. A61b 3/16, 3/10; G02b 7/04, 15/02
U.S. Cl. 73—80 1 Claim



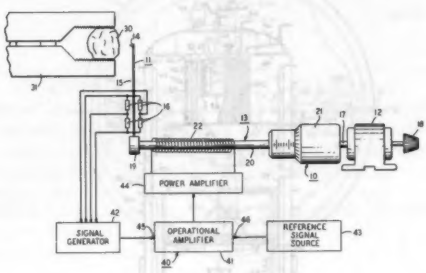
An applanation tonometer having a bi-prism to indicate the

displacement of the contact element against a corneal surface. The bi-prism is located at the entrance pupil of the associated optical system.

3,693,417
MICROHARDNESS TESTER REGULATED BY A MAGNETOSTRICTIVE CONTROL ARRANGEMENT

Joseph Henry Fritz, and Thomas Gerald Johns, both of Columbus, Ohio, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 25, 1970, Ser. No. 49,586
Int. Cl. G01n 3/42
U.S. Cl. 73—81 **5 Claims**

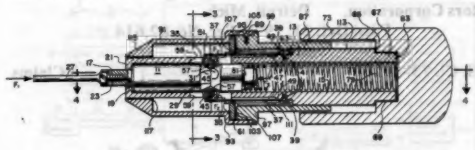


A hardness testing device is disclosed which includes a driving motor, an indenter and a force compensating mechanism for regulating the force transmitted to the indenter from the driving motor.

3,693,418
ADJUSTABLE FORCE PROBE

Walter E. Kaspareck, deceased, late of Huntsville, Ala. (by Anni Kaspareck, administratrix); Ben B. Swords, Albertville, and Werner K. Rosinski, Huntsville, both of Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 17, 1970, Ser. No. 99,174
Int. Cl. G01n 3/42
U.S. Cl. 73—85 **9 Claims**

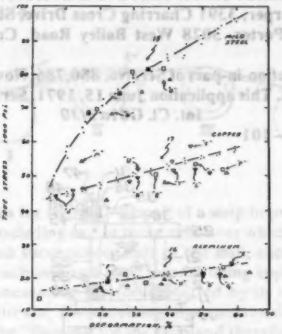


A hand operated force probe for applying a preset force against an object to determine if the object is properly secured comprising a plunger engaged by rollers fitting in an annular groove in the plunger. The rollers are held in the groove by longitudinal yieldable springs and the effective length of the springs is adjustable to vary the stiffness of the springs and thus vary the force required to ride the rollers out of the groove. In operation, the end of the plunger is pressed against a surface and when the force applied through the plunger exceeds the preset force, i.e. the force required to ride the rollers out of the groove, the plunger promptly retracts.

3,693,419
COMPRESSION TEST

Vincent De Pierre, Dayton, Ohio; Alan T. Male, Export, Pa., and George Saul, Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force

Continuation-in-part of Ser. No. 64,536, Aug. 14, 1970, abandoned. This application Dec. 30, 1970, Ser. No. 102,583
Int. Cl. G01n 3/08
U.S. Cl. 73—89 **2 Claims**

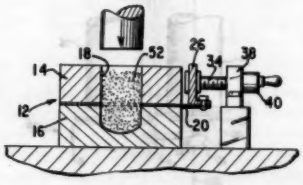


A combined true stress-strain data-generating testing technique, and method for determining unknown loads applied in compression to relatively thin, metallic and ring-shaped test specimens by means of flat die platen members. Both the die friction component ΔD of the total applied load and the percent deformation ΔT, or true strain of the ring specimen, as well as the unknown compression load, may be determined respectively from the change in shape or inside diameter and thickness of the deformed specimen. From a plot between the previously computed deformation, ΔT, or true strain, and die friction component, ΔD, the ratio between the total pressure applied to the specimen and the true flow stress may be computed from the total pressure required to overcome the previously found die friction component, ΔD. A true stress-strain curve may be plotted from values found in testing a number of specimens under various loads, and the load being applied may be found, when the basic flow behavior of the material under test is known.

3,693,420
COHESION TEST DEVICE

Paul E. Wray, 30 Stonehenge Lane, Chester, Pa., and Stephen A. Howard, 265 Iven Avenue, Delaware, Pa.

Filed June 1, 1971, Ser. No. 148,352
Int. Cl. G01n 3/42, 3/24
U.S. Cl. 73—94 **4 Claims**



The disclosure is directed to a method and apparatus for measuring the cohesive forces in a tablet formed from compressed powders and is made up of a split die which has a cavity for the powders to be compressed, a cutting blade disposed between the two portions of the split die and extending outside the die, a cantilever beam connected at its free end to the extending end of the blade, reciprocating means connected to

the other end of the cantilever beam to draw the blade through a compressed powder, while the compressed powder is still in the die cavity, and strain gauges connected to the cantilever beam to measure the amount of bending imparted to the cantilever beam by the resistance of the compressed powder to the movement of the blade. The cohesion forces thus determined may be used to predict the tableting characteristics of the material.

3,693,421

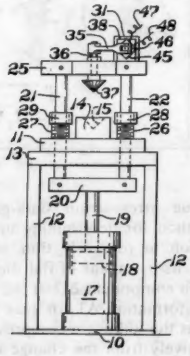
ELASTOMER TESTING INSTRUMENT

Paul W. Karper, 3391 Charring Cross Drive, Stow, Ohio, and John P. Porter, 3028 West Bailey Road, Cuyahoga Falls, Ohio

Continuation-in-part of Ser. No. 880,786, Nov. 28, 1969, abandoned. This application June 15, 1971, Ser. No. 153,394

Int. Cl. G01n *3/30*

U.S. Cl. 73—101 **24 Claims**



Stress relaxation apparatus and method which applies a sudden impulse torque to a heated or an unheated sample of material of uncured or cured elastomeric material such that a stress relaxation measuring means located between the sample of material and the force applier is effective to measure the relaxation that occurs in the sample of material progressively.

3,693,422

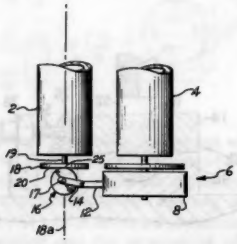
VEHICLE TESTING APPARATUS

John Anthony Marten, and Bernard Arthur Gee, both of Norfolk, England, assignors to Suntester Limited, Kings Lynn, Norfolk, England

Filed March 15, 1971, Ser. No. 124,402

Int. Cl. G01l *5/13*

U.S. Cl. 73—117 **11 Claims**



The disclosure describes a chassis dynamometer having at least one pair of rollers for contact with at least one traction wheel of a motor vehicle, one of the rollers being braked by an eddy-current brake the stator of which is mounted for pivotal movement in accordance with the braking torque developed against a resilient bias. A perforated disc is mounted on and for movement with the stator of the eddy-current brake, the rim of the disc being in driving contact with the surface of the second disc driven to rotate by the other roller so that the speed of rotation of the first disc is substantially proportional to the traction power output of the motor vehicle.

3,693,423

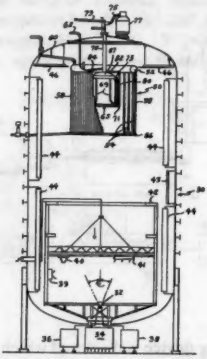
NATURAL CIRCULATION LIQUID PUMPING SYSTEM IN PLUME PUMPING SYSTEM FOR TEST ENGINES

Milton J. Triplett, Tullahoma, Tenn., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Oct. 6, 1971, Ser. No. 187,040

Int. Cl. G01m *15/00*

U.S. Cl. 73—117.1 **5 Claims**



A natural circulation pumping system, used in a plume pumping system for a test engine, having a liquid coolant in a reservoir-separator which supplies the liquid to a plurality of insulated downcomer tubes. The downcomer tubes are connected at their lower ends to an annular manifold. The liquid is returned to the reservoir-separator through a plurality of riser tubes wherein the vaporizing of the liquid, by the heat added, causes the liquid to circulate, since the liquid-vapor mixture in the riser tubes has less weight than the liquid in the downcomer tubes. Natural separation takes place in the reservoir-separator as the heavier liquid falls into the liquid pool and the light gas rises to be vented.

3,693,424

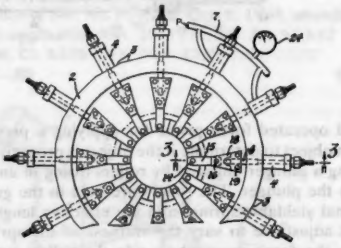
RING TESTING MACHINE

Joseph A. Wagle, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 21, 1970, Ser. No. 82,614

Int. Cl. G01n *3/08*

U.S. Cl. 73—120 **3 Claims**



Ring testing machines which embody an annular frame, a ring of jacks, and tension members extending in from the jacks to a ring to be tested. The tension members may be coupled to

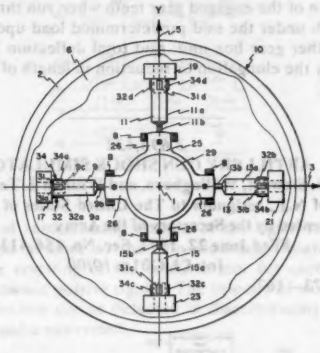
shoes to fit the inside of the ring to be tested or the ring may be clamped so that the jacks exert a delaminating or separating pull on the radially outer portion of the ring. Heat may be applied to the ring during the testing.

3,693,425

FORCE MEASURING APPARATUS

Joseph M. Starita, 10305 Foxbow Dr., Louisville, Ky., and Christopher W. Macosko, 220-C King St., Princeton, N.J.

Filed April 30, 1970, Ser. No. 33,251
Int. Cl. G01l 5/16
U.S. Cl. 73—133 12 Claims



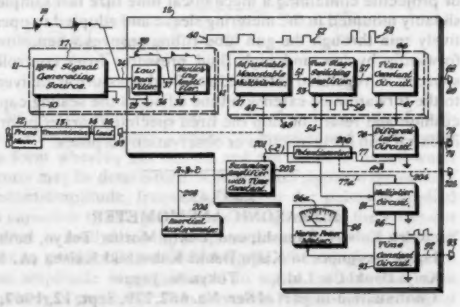
Apparatus for independently measuring mutually perpendicular forces and torque about the line of action of one said force. A set of four cantilevered beams extends along a pair of X—Y coordinate axes and supports a rigid platform in the X—Y plane. A force receiving means above said X—Y plane and on the Z-axis intersecting the origin of said X—Y axes, is rigidly coupled to said platform, whereby forces applied thereto produce bending in said beams in accordance with the direction of the force. Strain gauge means and bridge circuit means are arranged to detect only strains in said beams resulting from the force desired to be measured.

3,693,426

PORTABLE USEFUL HORSEPOWER MEASURING INSTRUMENT

Donald R. Little, 132 Chestnut Drive, Greensburg, Pa.

Filed July 2, 1971, Ser. No. 159,202
Int. Cl. G01l 3/24
U.S. Cl. 73—133 18 Claims



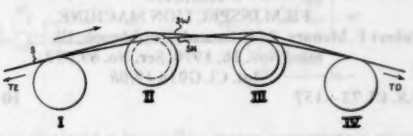
A readily portable apparatus and method for determining the useful horsepower of any prime mover, operating on any given roadway grade with a known load. The apparatus includes a velocity signal source having an input of the velocity of rotation delivered by the prime mover and having an output directly proportional to the velocity of rotation of the prime mover. An inertial acceleration signal generator which has a signal output directly proportional to the absolute acceleration parallel to the given roadway. A signal summing and time constant circuit having at least one input being the absolute acceleration signal.

3,693,427

SHAPE CONTROL SENSOR FOR COLD ROLLING MILLS

Allyn S. Norton, Jr., Charlottesville, Va., assignor to General Electric Company

Filed Dec. 23, 1970, Ser. No. 100,973
Int. Cl. G01l 5/04
U.S. Cl. 73—144 10 Claims



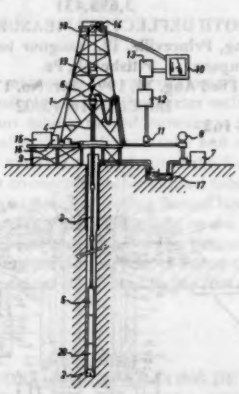
An apparatus for sensing "shape" of a strip in processing by a rolling mill including two or more rolls over which the strip is passed between successive stands of the mill, each roll being journaled at each end and each journal being supported by a load cell for measuring the force exerted by its roll and differentiating circuits for receiving the measured forces for determining the "flatness" of the strip and therefrom correcting or adjusting the parameters of the mill stands. In its simplest form one of the rolls is provided with a convex crown, and in a more sophisticated version of the invention the apparatus includes two crowned rolls, one roll being convex and the other being concave.

3,693,428

HYDRAULIC CONTROL DEVICE FOR TRANSMITTING MEASURING VALUES FROM THE BOTTOM OF A WELL TO THE SURFACE AS PRESSURE PULSES THROUGH THE DRILLING MUD

Jean Pierre Le Peuvedic, Avenue Montardam, Lotissement du Levant No. 4, 64 Pau, and Claude Quichaud, 22, rue des Chenes, 64 Billere, both of France

Filed July 24, 1970, Ser. No. 58,085
Int. Cl. E21b 47/12
U.S. Cl. 73—151 7 Claims



Device for transmitting information with respect to measuring values of parameters of a drilling operation from the bottom of the well to the surface in the form of pressure pulses through the mud stream comprising flow limiting means in the path of said stream controlled by electric signals derived from the measured values of said parameters, hydraulic power-accumulator means storing under pressure a control fluid forced

therein by pump means energized by a bottom turbine driven by the mud stream and releasing said pressurized fluid through said control means in response to said electric signals, and surface means for sensing said pressure pulses and converting the same to electric values representative of the measured values of said parameters.

3,693,429

Patent Not Issued For This Number

3,693,430

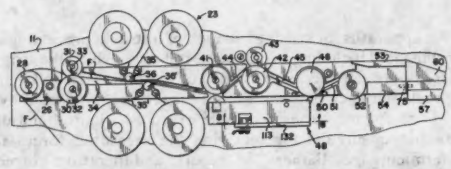
FILM INSPECTION MACHINE

Robert F. Menary, 2449 Strand, Northbrook, Ill.

Filed Nov. 16, 1970, Ser. No. 89,572

Int. Cl. G01n *19/08*

U.S. Cl. 73—157 **10 Claims**



A machine is disclosed for inspecting motion picture film to enable improper splices, sprocket hole tears and similar defects to be detected so that appropriate repairs may be made, which machine comprises an upright cabinet having a vertical work face with reel supports on opposite sides of a center work area across which the film traverses a generally horizontal path between the reels. Film cleaning devices, thickness sensors, and hole or tear detecting devices are provided along the film path with associated operating mechanism for stopping the film travel when a defect is detected which requires repair. The film is guided by edge guide channels and guide members extending between rollers or other film supports where the sensing and detecting operations are carried out and provision is made for advancing the leading end of the film so as to automatically thread the film when a reel is placed in the machine for inspection.

3,693,431

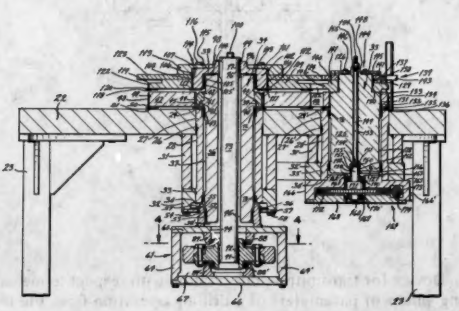
GEAR TOOTH DEFLECTION MEASURING MACHINE

Dean D. King, Princeville, Ill., assignor to Westinghouse Air Brake Company, Pittsburgh, Pa.

Filed Aug. 26, 1971, Ser. No. 175,241

Int. Cl. G01m *13/02*

U.S. Cl. 73—162 **21 Claims**



A gear tooth deflection measuring machine adapted to measure both the deflection of a single tooth under loaded and unloaded conditions and to measure the total deflection of the particular gear teeth in engagement during rotative mesh and in loaded condition; said machine being based upon the closed loop or four-square theory incorporating a pair of spaced-apart parallel shaft assemblies, each of which are operatively engaged at their lower end portion to a gear box unit for effecting independent rotation of same and at their upper end portion to a gear and ring assembly, including a test gear, a measuring ring and a load ring. The test gears are disposed in meshing engagement and the measuring and load rings are interconnected by a relatively thin band of linear stretch material, such as beta titanium or beryllium bronze; the load band being utilized for applying a predetermined load or torque on one of said shaft assemblies through operation of one of said gear box units, and the measuring band for recording the total deflection of the engaged gear teeth when run through operative mesh under the said predetermined load upon operation of the other gear box unit; said total deflection being determined by the elongation or reduction in length of the measuring band.

3,693,432

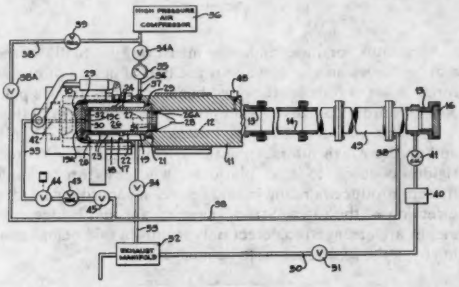
ARTILLERY GUN SHOCK SIMULATOR

Walter N. Stewart, Willingboro, and William J. Tatu, Palymra, both of N.J., assignors to The United States of America, as represented by the Secretary of the Army

Filed June 22, 1971, Ser. No. 156,411

Int. Cl. G01m *19/00*

U.S. Cl. 73—167 **5 Claims**



A weapon shock simulator testing arrangement having a gun tube with a breech mechanism to close its rearward end and extension tubes connected to its forward muzzle end terminating with a sealing cap. A metering sleeve, having a plurally apertured cylindrical sidewall between its outwardly directed end flanges, is positioned in an internally enlarged annulus of the gun tube that defines a breech chamber. A piston or projectile containing a mechanical time fuze test sample is slidably mounted in the metering sleeve and adopted to operatively spin through the gun tube rifling grooves when moved forwardly by low and high fluid pressures from controlled sources. A regulated intermediate fluid pressure is delivered to the forwardmost extension tube adjacent the sealing cap to cushion and retard or stop the fired specimen carrier prior to its extraction for inspection or observation purposes.

3,693,433

ULTRASONIC ANEMOMETER

Yasuhiro Kobori, Tanashi, and Yukiji Morita, Tokyo, both of Japan, assignors to Kaijo Denki Kabushiki Kaisha (A. K/a Kaijo Denki Co. Ltd.), Tokyo-to, Japan

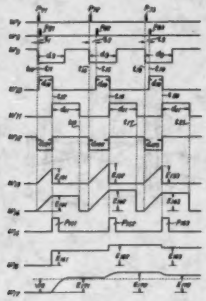
Continuation-in-part of Ser. No. 667,279, Sept. 12, 1967, abandoned. This application March 31, 1970, Ser. No. 24,213

Int. Cl. G01w *1/02*

U.S. Cl. 73—189 **5 Claims**

An ultrasonic anemometer for detecting the direction and the magnitude of the wind by the use of two pairs of ultrasonic transmitters and receivers arranged in the wind in spaced-apart opposition to each other and in reverse sense directions to each other and each pair of received ultrasonic pulsive

signals is converted to a pulse the duration of which is proportional to a time difference between respective incoming instants of said each pair of received ultrasonic pulsive signals. The setting of a multivibrator is carried out when the instantaneous level of the signal exceeds a predetermined threshold level and the resetting of the multivibrator is carried out when



the number of zero-crossing instants of the signal reaches a predetermined number so that the incoming instant is detected at the resetting of the multivibrator for each of the received ultrasonic pulsive signals. The velocity of wind along the sense direction can be detected by discriminating the duration of the pulse converted.

3,693,434

Patent Not Issued For This Number

3,693,435

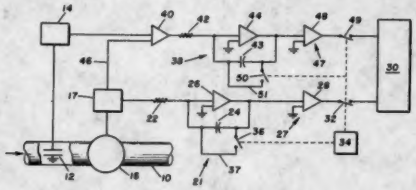
TIME AVERAGING METHOD AND APPARATUS FOR OBTAINING FLUID MEASUREMENTS

John B. Cox, 2608 Fannin St., and Jacque R. Stoltz, 3211 West Dengar, both of Midland, Tex.

Division of Ser. No. 693,867, Dec. 27, 1967, Pat. No. 3,580,072. This application Aug. 19, 1970, Ser. No. 65,037

Int. Cl. G01f 1/00

U.S. Cl. 73—194 E **6 Claims**



This specification discloses a method and apparatus for accumulating signals from a water-cut monitor and a flow meter in a form whereby the net oil and net water in an oil-water mixture may be determined. A flow meter signal in the form of constant-amplitude, frequency-variable d-c pulses is applied to a capacitor to charge the same. A signal from the water-cut monitor is modulated in proportion to the meter signal in order to produce a modulated signal of d-c pulses in which pulse amplitude is proportional to water content and pulse frequency is proportional to flow rate. This modulated signal is stored on another capacitor. Both capacitors are interrogated at periodic time intervals in order to obtain read-out signals representative of the charges thereon and the capacitors are discharged. Also disclosed is a system for obtaining gas flow information. In this system a pressure signal is modulated in proportion to a ΔP signal to produce a modulated signal of d-c pulses which is applied to a capacitor. The capacitor is interrogated as described above.

3,693,436

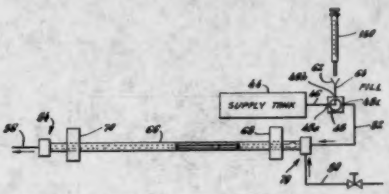
LIQUID FLOW METER

Kenneth J. Gildner, New Milford, Conn., assignor to Laboratory Data Control, Inc., Danbury, Conn.

Filed Aug. 28, 1970, Ser. No. 67,796

Int. Cl. G01f 1/00

U.S. Cl. 73—194 E **7 Claims**



There is disclosed a liquid flow meter comprising a transparent glass tube upon which is positioned a pair of spaced photodetectors. The liquid to be measured is passed through the tube and through the detectors. A supply tank filled with gas at a suitable pressure is connected to a valve which, when actuated, injects into the liquid stream a bubble of predetermined size. Passage of the bubble through the two photodetectors actuates a timing circuit which displays the elapsed time, thereby giving an accurate measurement of flow rate.

3,693,437

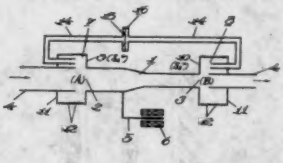
MOVABLE VENTURI TYPE TUBE FLOW METER

Kamekichi Shiba, No. 159, Kagocho, Bunkyo-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 743,200, July 8, 1968, which is a continuation-in-part of Ser. No. 500,666, Oct. 22, 1965, Pat. No. 3,429,181. This application Jan. 26, 1971, Ser. No. 109,815

Int. Cl. G01f 1/00

U.S. Cl. 73—194 M **14 Claims**



A flow meter for measuring the rate of flow of a liquid regardless of the viscosity losses. The flow meter includes an axially movable Venturi tube arranged between a pair of stationary tubes coaxial with the Venturi tube and respectively feeding liquid to be measured in and out of the Venturi tube, first actuator means connected to the Venturi tube for movement therewith in axial direction during flow of liquid through the latter, second actuator means actuated by the pressure in the liquid at the inlet and outlet end of the Venturi tube, and means for determining the actual flow of liquid through the Venturi tube, which means is actuated by the first and second actuator means.

3,693,438

KARMAN'S VORTICES GENERATING DEVICE

Hiroo Yamasaki; Yoshio Kurita; Yutaka Ishikawa, and Takehiro Sawayama, all of Tokyo, Japan, assignors to Yokogawa Electric Workds, Ltd., Tokyo, Japan

Filed April 23, 1971, Ser. No. 136,980

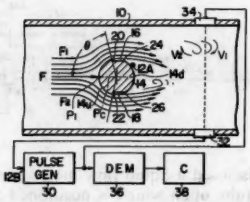
Claims priority, application Japan, May 9, 1970, 45/39601

Int. Cl. G01f 1/00

U.S. Cl. 73—194 B **18 Claims**

A vortex generating element of the type used in flow metering apparatus and having a generally elongate cylindrical

shape mounted in a stream of flowing fluid so as to produce Karman's vortices at a rate proportional to the velocity of the flowing fluid, with means detecting the production of vortices to give a linearly related measure of fluid velocity. To improve the correspondence of vortex production rate with flow velocity over wide conditions of flow, the element is formed on opposite sides thereof with recessed surface portions meeting the upstream surface of the element in an edge which lies substantially where the boundary layer of the fluid separates from the element surface during low velocity conditions of flow. The recessed surface portion meets the downstream surface of the element inwardly of said edge, whereby said edge forms an outer extremity of said element to said fluid flow and compels boundary layer separation.



3,693,439

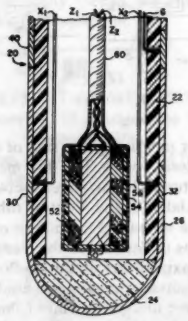
ELECTROMAGNETIC WATER CURRENT METER

Vincent J. Cushing, 9804 Hillridge Drive, Kensington, Md.

Filed July 30, 1971, Ser. No. 167,673

Int. Cl. G01f *1/00*; G01p *5/08*

U.S. Cl. 73—194 EM **5 Claims**



An electromagnetic water current meter employing a magnet producing an alternating flux field which is of finite intensity and zero slope during a significant portion of each half cycle. The electrodes which receive the water current-generated voltage signal exhibit a sufficiently high resistivity as to assure that the distributed capacitance at the exposed faces of the electrodes does not cumulatively produce an integrating effect which will extend decay of "transformer effect" voltages into the terminal portions of each half cycle during which signal sampling is effected. Carbon which displays a resistivity of about 3,500 microhm-cm at room temperature is a preferred material.

3,693,440

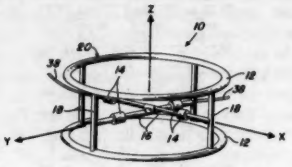
ELECTROMAGNETIC FLOWMETER

Jack R. Olson, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed March 21, 1969, Ser. No. 809,361

Int. Cl. G01f *1/00*; G01p *5/08*

U.S. Cl. 73—194 EM **6 Claims**



An electromagnetic flowmeter which has an "open" cage construction of magnet coils and electrodes arranged to achieve an angular response which closely approximates a true cosine, resulting from unrestricted fluid flow through the magnetic field.

3,693,441

FLUID STREAM SENSING DEVICE

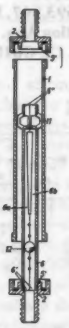
Heinz-Jurgen von Obstfelder, Speldorf Birkenstr. 15, 433 Mulheim/Ruhr, Germany

Filed Oct. 26, 1970, Ser. No. 84,043

Claims priority, application Germany, Nov. 4, 1969, P 19 55 280.8

Int. Cl. G01f *1/00*

U.S. Cl. 73—208 **4 Claims**



A fluid stream sensing device has a casing and therein a transparent measuring tube and within the same a sensing body arranged to be floated by incoming fluid stream and lifted by same to a level being representative of the parameters of said stream to be measured. The tube is provided with a series of compensating openings on a line parallel to the longitudinal tube axis, and the tube is composed of easily assemblable shells.

3,693,442

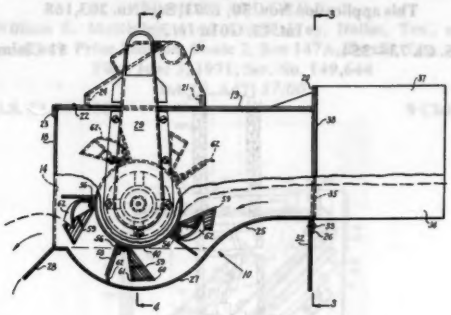
Patent Not Issued For This Number

3,693,443

INTEGRATING WATER METER

Norman F. Willett, 1302 L St; Perry R. Stout, 710 Oak Avenue, both of Fresno, Calif., and James R. Brownell, 5541 N. 6th St., Fresno, Calif.

Filed Jan. 15, 1971, Ser. No. 106,869
Int. Cl. G01f 1/02
U.S. Cl. 73—229 5 Claims



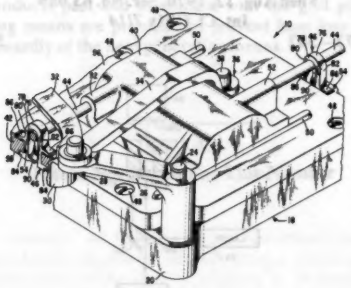
An integrating water meter for use in irrigation ditches to record the volume of water used in irrigating the farmers fields. The meter consist of a small undershot water wheel with flexible vanes supported on each side to improve operation and sealing of the vanes in the raceway. The raceway is a 120° cylindrical segment with an axis that coincides with the axis of the vane rotor. The rotor is connected to a cyclometer to integrate water flow.

3,693,444

VALVE GUIDES FOR METER SLIDE VALVES

Kenneth A. Carroll, Mt. Airy, Pa., assignor to The Singer Company, New York, N.Y.

Filed July 28, 1971, Ser. No. 166,882
Int. Cl. G01f 11/08
U.S. Cl. 73—268 7 Claims



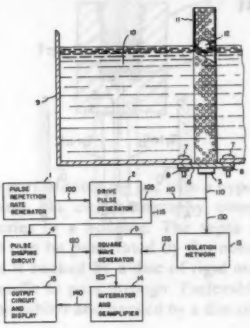
A self-stabilizing valve guide secured in a slot in a meter valve housing to guide a slider rod of a slide valve. The valve guide is snapped into position within the slot wherein pairs of tabs formed on said guide hold the same in position. A lock tab is formed on said guide to permit limited yielding of said guide due to external forces, but prevents the pairs of tabs from being unseated from the slot.

3,693,445

LIQUID LEVEL MEASUREMENT DEVICE

Sven J. Johnson, Main Road, Southhold, N.Y.

Filed June 26, 1970, Ser. No. 50,192
Int. Cl. G01f 23/12, 23/28
U.S. Cl. 73—290 V 4 Claims



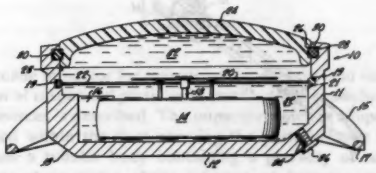
A liquid level measurement device utilizes ultrasonics to determine the height of a liquid. The ultrasonic transducer is located at the bottom of the liquid container and within a porous or holey cylinder. Ultrasonic pulses are transmitted up the cylinder to a spherical float where they are reflected back to the transducer and sensed. The cylinder tends to minimize the spherical spread of the pulse wave. A timing system measures the time interval between the transmission and reception of the ultrasonic pulses by the transducer. The time interval measured is directly proportional to the height of the liquid and is electronically converted to an equivalent height.

3,693,446

DEPTH GAUGE

Douglas K. MacNiel, Costa Mesa, Calif., assignor to U.S. Divers Co., Santa Ana, Calif.

Filed Aug. 11, 1970, Ser. No. 62,951
Int. Cl. G01f 23/20; G01l 7/16, 7/02
U.S. Cl. 73—300 20 Claims



The casing of a diver-held depth gauge comprises a liquid filled chamber in which is carried a pressure indicating

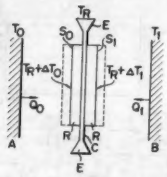
mechanism comprising a Bourdon tube, dial and pointer. The chamber extends substantially across the entire casing and is sealed by a rigid plexiglass lens. The lens itself is resiliently mounted in the opening of the casing for limited sliding movement. In addition to the usual function of enabling visual access to the internal indicating mechanism, the lens transmits ambient external pressure to the confined internal liquid.

3,693,447

RADIANT HEAT FLOW METER

Sadao Sumikama, Yokohama, Japan, assignor to Showa Denko K.K., Tokyo, Japan

Filed Dec. 29, 1970, Ser. No. 102,385
Int. Cl. G01k 7/02, 17/00
U.S. Cl. 73—341 **3 Claims**



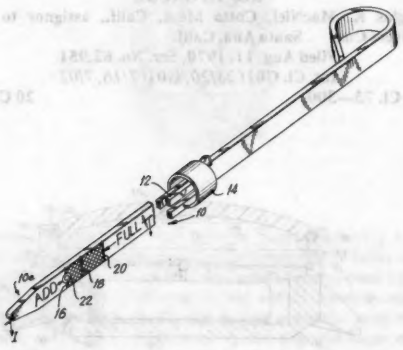
A radiant heat flow meter is constructed of thermally resistant plates disposed on two faces of a thin plate of good heat conductivity. One or more pairs of differential thermocouples are disposed on the surfaces of the thermally resistant plates and connected with each other. Black thermally resistant plates are arranged in contact with the thermocouples and thin transparent plates overly the black plates so as to form air layers therebetween.

3,693,448

INDICATING DEVICE FOR ENGINES

Harry Seltzer, East Meadow, N.Y., assignor to Lee Myles Corp., Maspeth, N.Y.

Continuation of Ser. No. 726,683, May 6, 1968, abandoned. This application Oct. 12, 1970, Ser. No. 80,210
Int. Cl. G01k 11/08; G01f 23/04
U.S. Cl. 73—344 **3 Claims**



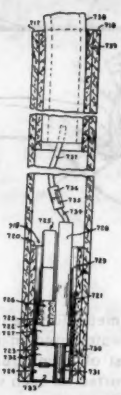
An oil temperature indicating device which comprises an oil temperature indicating means adapted to undergo a detectable physical change when subjected to an oil operating temperature at or above a pre-determined temperature, and a mounting means therefor adapted to dispose said oil temperature indicating means within a mass of oil under operating conditions, whereby operation of the oil at or above the predetermined temperature can be detected by a change caused thereby in the oil temperature indicating means.

3,693,449

DEVICE FOR SAMPLING MOLTEN METAL

William J. Collins, 7005 Madison St., Merrillville, Ind.

Division of Ser. No. 61,625, Aug. 6, 1970, Pat. No. 3,656,338. This application Nov. 30, 1971, Ser. No. 203,168
Int. Cl. G01n 1/12
U.S. Cl. 73—354 **11 Claims**



Apparatus of the type in which a sample receiving means is positioned in the end of an elongated tube intended to be dipped into a body of molten metal. The sample receiving means along with a thermocouple is supported in a mass of cement surrounded by a sleeve inserted into the end of a hollow tube.

3,693,450

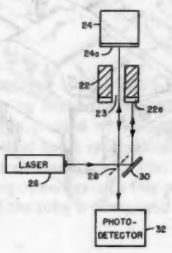
Patent Not Issued For This Number

3,693,451

FALLING WEIGHT GRAVITY GRADIOMETER

Henry F. Dunlap, 7422 Rosemont Rd., Dallas, Tex., and William M. Campbell, 1521 Atlanta, Irving, Tex.

Filed Aug. 12, 1970, Ser. No. 63,089
Int. Cl. G01v 7/14
U.S. Cl. 73—382 **5 Claims**



A gravity gradiometer based on dual free-falling objects in an evacuated vessel. A laser light source generates a beam of coherent light which is split into two measuring beams by optical dividing means. Light reflective means directs the measur-

ing beams in vertical pathways so that one of the beams strikes one object and the other beam strikes the other object. Light reflectors mounted on the objects return the measuring beams to an optical combining means which combines them into a single output beam. Photodetector means optically coupled to the output of the optical combining means produces a signal determinative of the movement of the objects relative to each other during free fall.

3,693,452

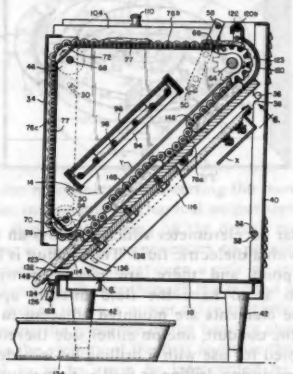
BROILER AND GRILL

William L. McGinley, 6142 Averill Way, Dallas, Tex., and Johnnie Prine Pearson, Route 2, Box 147A, Terrill, Tex.

Filed June 3, 1971, Ser. No. 149,644

Int. Cl. A47j *37/00*

U.S. Cl. 99—386 **9 Claims**



An automatic broiler and grill has heat generating means for cooking and heating food products and heat exchanging means located to ensure uniform heating of the product, and to prevent overheating of the grill plate as food products are conveyed along the grill plate. A thermostatically controlled auxiliary heater is disposed beneath the grill plate to ensure thorough cooking of the food products. A sheet of non-sticking substance may be loosely hung on the grill plate to prevent the food products from sticking to the grill plate. A conveyor assembly is arranged to provide for the loading of a plurality of food products at one time as well as to convey the food products past and in contact with the grill plate. Heat reflecting means are provided to prevent heat loss upwardly and outwardly of the heat generating means.

3,693,453

Patent Not Issued For This Number

3,693,454

Patent Not Issued For This Number

3,693,455

SAMPLE INJECTION DEVICE

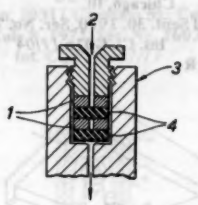
Albert Frederick Harding, 129 Hanworth Road, Hampton; Brian Pearce, Beg Meil, Onslow Crescent, Woking, and William Llewelyn Thomas, Pen Bryn, Bagshot Road, Englefield Green, Egham, all of England

Filed Aug. 25, 1970, Ser. No. 66,708

Claims priority, application Great Britain, Sept. 2, 1969, 43,311/69

Int. Cl. G01n *1/00, 31/08*

U.S. Cl. 73—422 GC **2 Claims**



An injection port suitable for use with a hypodermic syringe in high pressure gas chromatography comprises 2 septa mounted in series in a housing. The septa are made of a material which can be penetrated by the needle of a syringe and each septa is backed by a disc of rigid material having a hole for the needle to pass through. Preferably the septa are made of silicone rubber and backed by a disc of stainless steel.

3,693,456

Patent Not Issued For This Number

3,693,457

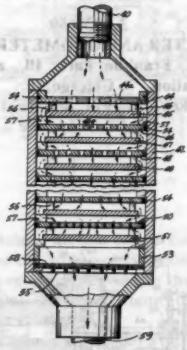
SOURCE TEST CASCADE IMPACTOR

Michael J. Pilat, Seattle, Wash., assignor to The Battelle Development Corporation, Columbus, Ohio

Filed Feb. 24, 1971, Ser. No. 118,408

Int. Cl. G01n *15/02*

U.S. Cl. 73—432 PS **4 Claims**



A cascade impactor for measuring the quantity and size distribution of suspended particles in stacks, ducts and other pollution sources is described. The impactor which is adapted to be placed within the duct carrying the particle-laden fluids comprises a tubular body containing a plurality of serially spaced-apart impactor plates interspaced between serially spaced-apart jet stages, each succeeding jet stage having a smaller gas flow cross section than the preceding jet stage. A sized portion of the particulate matter suspended in gases flowing through the cascade impactor is captured by collection surfaces on the impactor plate placed below the specific

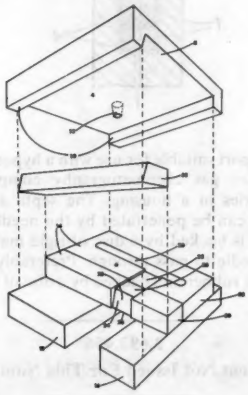
jet stage which imparts a sufficient amount of inertia to the particle for it to impinge upon the collection surface. Dry collection surfaces are used for liquid aerosols whereas collection surfaces covered with a sticky substance such as grease are utilized for dry particulate matter. The size distribution of the particulate matter is reflected by the amounts of particulate matter adhering to the various impactor plates.

3,693,458

RESIN FLOW TEST APPARATUS AND METHOD

Norman F. Odell, Crystal Lake, Ill., assignor to Morton International, Inc., Chicago, Ill.

Filed Sept. 30, 1970, Ser. No. 76,810
Int. Cl. G01n *11/04*
U.S. Cl. 73—432 R 9 Claims



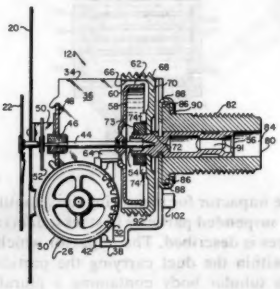
An apparatus and method for testing the performance of a thermo-setting resinous composition said apparatus comprising two cooperatively engageable sections, one of said sections having a series of depressions terminating in an exit gate thereby providing voids which when filled with a pressure injected resinous material cause said resinous material to be extruded in a ribbon from said exit gate.

3,693,459

SPEEDOMETER AND ODOMETER ASSEMBLY

Patrick L. Powell, Franklin Park, Ill., assignor to Stewart Warner Corporation, Chicago, Ill.

Filed Feb. 10, 1971, Ser. No. 114,193
Int. Cl. G01p *3/42*
U.S. Cl. 73—490 7 Claims



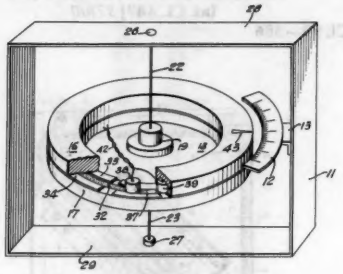
The following specification describes a speedometer having a worm gear on the field cup of the magnet driving the speed cup for simultaneously driving an odometer. In addition, the speedometer is provided with a one piece stamped U-shaped bracket for supporting the odometer and cross shaft transmitting movement from the field cup to the odometer with a tubular element fixed to the bracket for rotatably supporting the magnet shaft and cooperating with the bracket to prevent axial separation of the magnet shaft. The odometer dial brackets are positioned to form stops for the speed cup.

3,693,460

ANGULAR ACCELEROMETER

Fuad T. Saadeh, c/o Texaco Incorporated, P.O. Box 425, Bellaire, Tex.

Filed Sept. 22, 1969, Ser. No. 859,768
Int. Cl. G01p *15/08*
U.S. Cl. 73—516 5 Claims



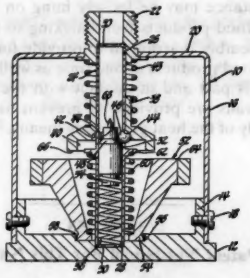
An angular accelerometer which employs an annular conduit filled with a dielectric fluid. The conduit is blocked at at least one point and there are piezoresponsive elements mounted so as to have the fluid directly apply pressure thereto. The elements are mounted adjacent to the blocked portion of the conduit, one on either side thereof. The structure is adapted for use with a drilling bit in order to indicate eccentricities during drilling as well as to measure instantaneous angular acceleration.

3,693,461

MULTIDIRECTIONAL SENSOR

William G. Daffron, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.

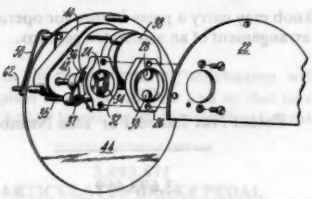
Filed May 6, 1970, Ser. No. 34,980
Int. Cl. G01p *15/02*
U.S. Cl. 73—514 9 Claims



A multidirectional sensor having an operator slidably mounted within a guide tube and resiliently biased toward actuated position. A plurality of balls are located within apertures in the tube and engage opposed radial shoulders of the operator and of an escapement to retain the operator against movement. The escapement is slidably mounted on the tube and resiliently biased into engagement with the balls to locate the escapement in a predetermined position. The resilient bias on the escapement is opposite that exerted on the operator. A seismic mass is seated on a support and surrounds the guide tube. The mass is resiliently located in a predetermined posi-

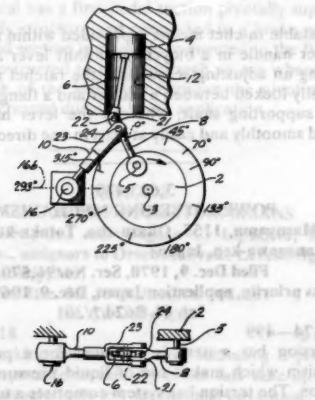
tion wherein its longitudinal axis is coaxial to or aligned with the axis of the operator and guide tube. An acceleration pulse of predetermined amplitude and time moves the seismic mass to a position where its axis is out of alignment with that of the operator and tube and the mass engages the escapement to move the escapement axially of the guide tube and permit the balls to move radially out of engagement with the opposed radial shoulders to release the operator.

3,693,462
TORQUELESS TRANSMISSION
Harold F. Eichacker, 23 Churchill Road, Wethersfield, Conn.
Filed June 28, 1971, Ser. No. 157,552
Int. Cl. F16h *21/16*
U.S. Cl. 74—25 **15 Claims**



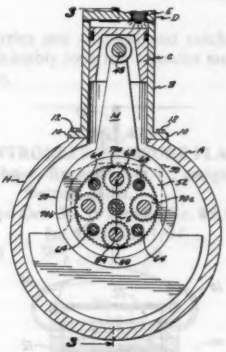
Apparatus for mechanically converting the movement of a driven member into usable mechanical output signals without imposing any significant loading on the driven member. The driven member is modified as necessary to permit it to roll a lightweight bearing element between a pair of apertures and the bearing element will pass through the second of said apertures and be picked up by a power drive unit which includes means for sensing the presence of the bearing element as it is driven back to the vicinity of the first aperture through which it is returned so as to again be intercepted by the driven member.

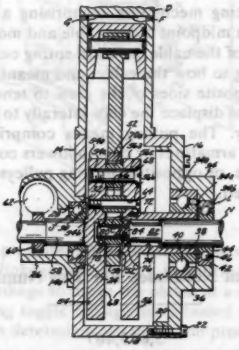
3,693,463
LINKAGE FOR A RECIPROCATING ENGINE CRANKSHAFT
Wilbur G. Garman, 349 E. 16th St., San Bernardino, Calif.
Continuation-in-part of Ser. No. 758,532, Sept. 9, 1968, Pat. No. 3,568,416. This application Aug. 3, 1970, Ser. No. 60,356
Int. Cl. F16h *21/26*
U.S. Cl. 74—38 **6 Claims**



A connecting linkage between a piston and a crank pin of a crankshaft in a reciprocating engine comprises a crank pin extension link pivotally connected at one end to the piston rod and pivotally connected at the other end to the crank pin. A toggle arm, which is longer than the crank pin extension link, pivots at one end about a stationary pivot point, and is pivotally connected at the other end to the point of connection between the piston rod and crank pin extension link. The toggle linkage drives the crank pin through an arc of substantially more than 180° during the power stroke of the piston, and applies a tangential thrust to the crank pin during a substantial portion of the power stroke of the piston.

3,693,464
RECIPROCATING-ROTARY MOTION CONVERSION DEVICE
Gerhard Wieckmann, 20311 Gresham St., Canoga Park, Calif.
Filed July 8, 1971, Ser. No. 160,663
Int. Cl. F16h *37/12*
U.S. Cl. 74—52 **6 Claims**





A reciprocating-rotary motion conversion unit that is particularly adapted for use with a conventional cylinder, piston and wrist pin to more efficiently utilize the power generated when charges of fuel are intermittently exploded in timed sequence within the cylinder.

The increased efficiency is attained by a unique connecting rod and gear assembly that are so operatively associated with the wrist pin and a drive shaft that the latter is rotated more than one revolution for each reciprocating cycle of the piston. In addition, the gear assembly is of such design that it has a throw that is twice the stroke of the piston, and as a result the torque exerted on the drive shaft is increased.

The invention is highly advantageous from an ecology standpoint in an automotive application as a simple reciprocating cycle of the piston results in the drive shaft being rotated more than one revolution rather than one revolution as occurs in a conventional internal combustion engine. Also, due to the increased number of revolutions of the

drive shaft for each cycle of reciprocation of the piston, less fuel is burned by a vehicle over that consumed in a conventional internal combustion engine, in rotating the drive shaft the same number of revolutions, and accordingly less products of combustion are discharged to the ambient atmosphere.

The present invention while most adaptable to automotive combustion engines may also be used advantageously for a high speed motor to rotate the drive shaft and impart relatively low speed reciprocating movement to a piston, such as is required in pumps and the like.

3,693,465

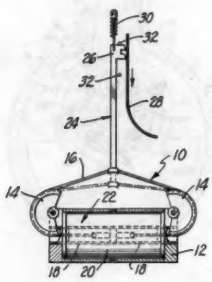
RECIPROCATORY MOTION MECHANISM WITH INTERCONNECTED DUAL ACTUATORS

Guy C. Caraway, 9703 Wiley Burke Ave., Downey, Calif.

Filed Nov. 27, 1970, Ser. No. 93,046

Int. Cl. F16h *21/44*

U.S. Cl. 74—110 **8 Claims**



A film advancing mechanism comprising a cable, a claw connected to the midpoint of the cable and movable laterally of the direction of the cable, a return spring connected to the claw and tending to bow the cable, and means for pulling on the cable on opposite sides of the claw to tend to straighten the cable and thus displace the claw laterally to advance a film engaged thereby. The pulling means comprises oppositely moving solenoid armatures or cam followers connected to the ends of the cable, or oppositely moving pulleys around which the cable is trained.

3,693,466

Patent Not Issued For This Number

3,693,467

SELECTOR LEVERS FOR VARIABLE-RATIO TRANSMISSIONS OF MOTOR VEHICLES

Adolf Oehl, Eulenrech, Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 11, 1971, Ser. No. 105,184

Claims priority, application Germany, Jan. 27, 1970, G 70 02 581.9

Int. Cl. G05g *9/00*

U.S. Cl. 74—473 R **9 Claims**

A selector lever for a stepped-ratio gearbox or automatic transmission of a motor vehicle comprises an upper lever member of plastics material, a lower lever member of metal, and damping means resiliently interconnecting the upper and lower lever members. An enlarged upper end portion of the upper lever member forms a control knob for the selector lever, such that the one-piece construction constituting the upper lever member can be produced by injection-moulding.

A metal vibration-damper weight may be incorporated in the upper lever member, in the vicinity of the control knob. A closure member mounted in the control knob may show the shift pattern or have a decorative function, or alternatively the

control knob may carry a press-button for operating a reverse blocker arrangement of an associated gearbox.

3,693,468

Patent Not Issued For This Number

3,693,469

BICYCLE GEAR SHIFT LEVER

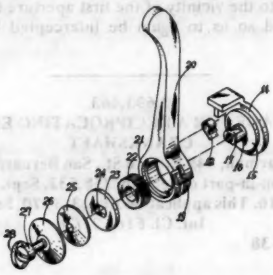
Nobuo Ozaki, Osaka, Japan, assignor to Maeda Industries, Ltd., Osaka, Japan

Filed Feb. 8, 1971, Ser. No. 113,287

Claims priority, application Japan, Nov. 26, 1970, 45/113350

Int. Cl. G05g *5/18*

U.S. Cl. 74—489 **4 Claims**



A rotatable ratchet means is provided within a ring portion of a lever handle in a bicycle gear shift lever apparatus. By tightening an adjusting screw bolt, the ratchet means can be frictionally locked between a washer and a flange portion of a ratchet supporting shaft, whereby the lever handle can be operated smoothly and easily at least in one direction.

3,693,470

POWER STEERING MECHANISM

Toshio Masuyama, 1155, Okazu-cho, Totuka-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Dec. 9, 1970, Ser. No. 96,570

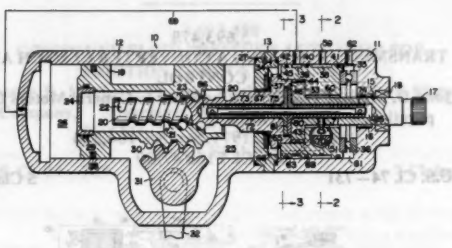
Claims priority, application Japan, Dec. 9, 1969, 44/116325

Int. Cl. B62d *1/20*

U.S. Cl. 74—499 **3 Claims**

A torsion bar system is provided for a power steering mechanism which makes use of liquid pressure for steering operation. The torsion bar system comprises a torsion bar and two brims joined to both ends thereof, at least one brim being joined to one end of the torsion bar via a tube covering the torsion bar and the brims being closely opposed to each other. Such two brims have a plurality of recessed portions on their respective peripheries, which are different in phase and in

which projections from input and output members are received and held so that the torsion bar system may be easily

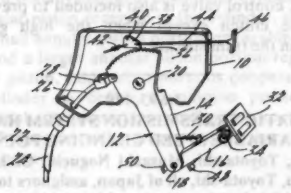


incorporated in the power steering mechanism with initial load being applied to the torsion bar and so that torsion may be given over the full length thereof in handling operation.

3,693,471
ARTICULATED BRAKE PEDAL

Patrick M. Glance, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 22, 1970, Ser. No. 100,612
Int. Cl. G05g 1/04
U.S. Cl. 74—518 **5 Claims**



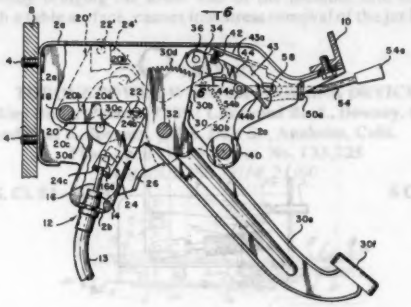
A variable ratio parking brake pedal assembly for a motor vehicle including a foot-operated articulated pedal lever. The articulated pedal has a first pedal section pivotally supported on vehicle body structure and connected to a brake actuator cable. A second section is pivotally connected to the first section and is constructed to swing through an arc whereby the effective length of the lever arm between the pivot and the pedal pad is increased during a brake application.

3,693,472
PARKING BRAKE OPERATING MEANS

Charles M. Hirst, Jr., and Eugene C. Lipshield, both of Moberly, Mo., assignors to Orscheln Brake Lever Mfg. Company, Moberly, Mo.

Filed Dec. 28, 1970, Ser. No. 102,021
Int. Cl. G05g 1/04
U.S. Cl. 74—518 **6 Claims**

Improved parking brake apparatus, including a pivotable cam member operable to initially effect fast take-up of the brake cable with relatively low mechanical advantage, and to subsequently effect slow take-up of the cable with relatively high mechanical advantage. The cam member is pivoted in the brake engaging direction by a foot-operated actuator member that is pivotally connected with the same housing as the cam member. The cam actuator member has a first arm portion that carries an actuating pin which engages a corresponding two-part cam surface on the cam member, and a second arm

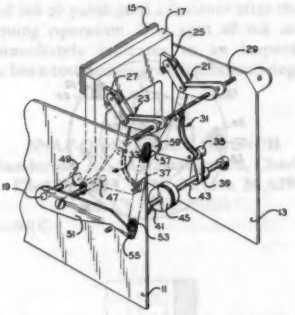


portion that carries one of pawl and ratchet locking components that releasably lock the actuator member in a brake engaged position.

3,693,473
CONTROLLED PRESSURE PLATEN

Robert W. Beachner, Rochester, N.Y., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 30, 1970, Ser. No. 85,546
Int. Cl. G05g 1/04
U.S. Cl. 74—520 **1 Claim**



A controlled pressure platen is disclosed having a pair of actuating toggle linkages. A driving toggle linkage acts on a driven toggle linkage to move the platen at a controlled pressure. The driving toggle linkage has a biased resist point, the biasing of which determines the minimum pressure applied by the platen.

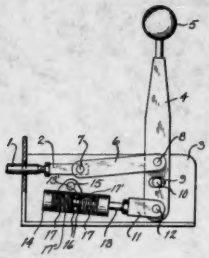
3,693,474
MULTIPLE FULCRUM VALVE OPERATING LEVER

Robert E. Trick, Racine, Wis., assignor to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Feb. 16, 1971, Ser. No. 115,511
Int. Cl. G05g 1/04
U.S. Cl. 74—522 **6 Claims**

A pivotal control lever for a valve stem has two differently spaced fulcrum connections with a base, one through a pin and slot connection and the other through a floating abutment which is held in a normal position by opposite springs. Initial pivotal movement of the lever is about the abutment, but when the limit of movement of the pin-slot connection is reached the lever begins to pivot about that connection, overriding the springs. In one form, deadband reduction is achieved by having the abutment radially further from the connection between the lever and stem than the pin and slot.

A second form has the abutment closer to enhance initial control. A modification of the second form has a lost motion connection between the lever and the abutment and a torsion



spring between the lever and stem which provides, in effect, an infinite lever to reduce deadband. Another form simply uses the torsion spring with a lost motion connection to reduce deadband.

3,693,475

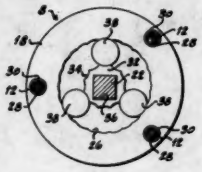
PLANETARY DETENT FOR ROTARY DEVICES

Robert C. Williams, III, Smithfield, N.C., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Jan. 6, 1971, Ser. No. 104,294

Int. Cl. G05g *5/06*

U.S. Cl. 74—527 **6 Claims**



A fluted disc is maintained concentrically within an internally serrated ring by a plurality of elastic cylinders disposed therebetween and positioned to provide a zero summation of forces through the central axis of the mechanism. The ring is fixed to the rotary device housing and a manually operable control shaft for the latter extends axially through the disc which is keyed for rotation with the shaft. Rotation of the disc rolls the elastic cylinders along the surfaces of the disc and ring to seat in the next adjacent flutes and serrations, respectively, the cylinders being compressed when passing over the ridges between adjacent flutes and serrations and rapidly restoring upon passing beyond the ridges to positively seat within the next flutes and serrations. The detent torque may be readily varied by increasing or decreasing the number of elastic cylinders. While mathematical and geometrical relationships are established to permit a detent mechanism to be provided for almost any rotary application, a primary relationship to be established in each instance requires that the chord length of the flutes be identically equal to the chord length of the serrations to permit continuous rotary operation.

3,693,476

Patent Not Issued For This Number

3,693,477

Patent Not Issued For This Number

3,693,478

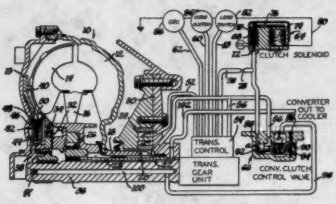
TRANSMISSION HAVING A CONVERTER CLUTCH AND A CONTROL

John D. Malloy, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 6, 1971, Ser. No. 104,224

Int. Cl. F16h *47/00*

U.S. Cl. 74—731 **5 Claims**



A transmission and control having a limited slip clutch located between the impeller and turbine members of the torque converter to improve transmission efficiency and reduce heat losses. A valve member responsive to turbine speed is incorporated in the control for controlling the engagement force on the clutch thereby controlling the amount of slip between the torque converter impeller and turbine members. A control valve is also included to prevent engagement of the clutch except when the high gear ratio is established in the transmission.

3,693,479

AUTOMATIC TRANSMISSION SYSTEM HAVING A VARIABLE SPEED CHANGING POINT

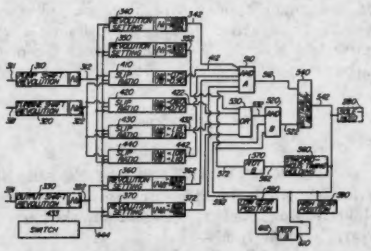
Eiji Toyoda, Toyota-shi; Masaaki Noguchi, Chikusa-ku, and Osamu Ito, Toyota-shi, all of Japan, assignors to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Nov. 10, 1969, Ser. No. 875,070

Claims priority, application Japan, March 25, 1969, 44/22826

Int. Cl. F16h *47/08*; B60k *31/00*

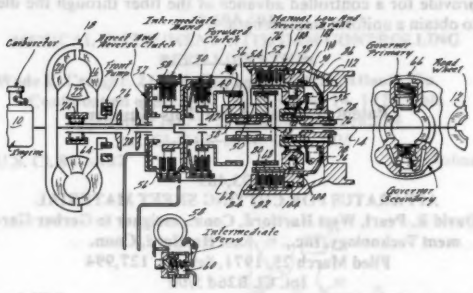
U.S. Cl. 74—731 **3 Claims**



An automatic transmission system in which the factor related to the load on the engine such as the degree of depression of the accelerator pedal, the negative pressure in the air intake pipe or the slippage of the torque converter and the factor related to the revolution of the engine such as the velocity of air flow into the engine or the number of revolutions of the input shaft of the transmission are the main factors for determining the speed changing point, and speed changing instructions are issued by an electrical control device including a log-

ical operation circuit and transistor relay circuit. In the system, the settings such as the slip ratio of the torque converter, the vehicle speed and the number of revolutions of the engine for determining the speed changing point are changed over by switch means which is manipulated as is desired.

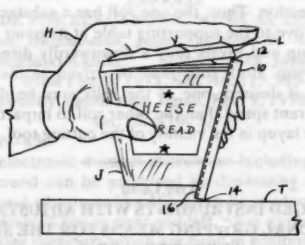
3,693,480
COMPOUND FLUID PRESSURE ACTUATOR FOR FRICTION TORQUE COUPLINGS
George E. Lemieux, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed May 27, 1971, Ser. No. 147,549
Int. Cl. F16h 3/44
U.S. Cl. 74—789 7 Claims



A fluid pressure operated friction disc coupling comprising a multiple disc assembly adapted to transfer friction torque when it is frictionally engaged, an annular cylinder and a compound annular piston received in the cylinder, said piston including a small annular piston portion engagable with the disc assembly and a larger annular piston portion registering with the smaller piston, said piston portions cooperating with the annular cylinder to define a common pressure chamber whereby initial actuation of the small piston portion upon distribution of pressure to the pressure cavity is cushioned prior to full engagement.

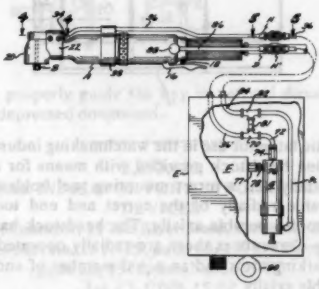
3,693,481
Patent Not Issued For This Number

3,693,482
REMOVER FOR SNAP-ON JAR LIDS
Norman L. Herold, 2404 Pinewood Ave., Baltimore, Md.
Filed Nov. 20, 1970, Ser. No. 91,410
Int. Cl. B67b 7/16
U.S. Cl. 81—3.34 1 Claim



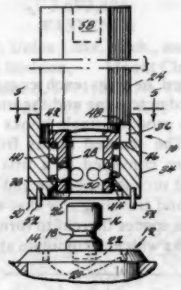
A jar-lid remover for snap-on type lids, particularly as used on conical-shaped containers, consisting of a rigid member longer than the height of the jar to be opened, the member adapted to be grasped with the jar in one hand with a contoured surface provided on the member fitting the side of the jar, the upper end of the member being against the lower edge of the lid, and the lower end of the member projecting below the jar, so that lowering the hand holding the jar and remover thereby bringing the lower end of the member into contact with a table surface, causes low-stress removal of the jar lid.

3,693,483
TORQUE POWER WRENCH MARKING DEVICE
Oakley Butler Palmer, 12852 Lakewood Blvd., Downey, Calif., and Paul E. Spencer, 513 S. Dale St., Anaheim, Calif.
Filed April 21, 1971, Ser. No. 133,225
Int. Cl. B25b 23/14, 21/00
U.S. Cl. 81—52.4 6 Claims



A fluid actuated torque power wrench that includes a power driven member for rotating a fastener to a desired degree of torque and automatically discharging a predetermined quantity of colored ink or paint on the fastener after the completion of the torquing operation. The spot of ink or paint on a fastener immediately indicates to an inspector that the fastener has been torqued to a predetermined degree.

3,693,484
SNAP-ON SPANNER WRENCH
George H. Sanderson, Jr., 18 Kamehameha, Charleston, S.C.
Filed April 29, 1971, Ser. No. 38,659
Int. Cl. B25b 13/00
U.S. Cl. 81—90 C 6 Claims



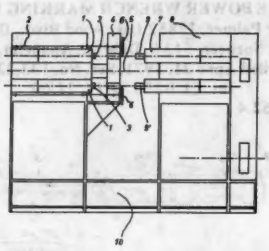
A tool for threading and unthreading a plug member having a grooved nipple; the tool is provided with a member having a bore adapted to receive the nipple; movable ball detent elements are provided about the lower end of the bore for engaging the grooved portion of the nipple; a spring biased movable member disposed about the bore is provided with cam surfaces for urging the ball detent elements into engagement with the groove of the nipple whereby backing off of the tool from the plug is prevented; the movable member is provided with diametrically disposed pins for engaging bores in the face of the plug so that rotation of the movable member will effect rotation of the plug.

3,693,485

MULTI-SPINDLE AUTOMATIC LATHE

Rene Maurer, 29, rue des Gorges, 2740 Moutier, Switzerland

Continuation-in-part of Ser. No. 746,621, Jan. 22, 1968, abandoned. This application May 21, 1970, Ser. No. 39,310
Int. Cl. B23b 9/04
U.S. Cl. 82—3 9 Claims



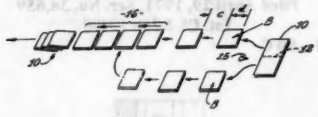
Automatic lathe for use in the watchmaking industry having a bar-holding headstock provided with means for advancing the bars axially and a turret mounting tool holders working tools operable radially of the turret and end tool holders mounting tools operable axially. The headstock has as many bar-holding elements as there are radially operated tool holders for working tools and an equal member of end tool holders operable axially.

3,693,486

CONVEYOR SYSTEM

Philip J. Maniaci, West Covina, and Byron E. McKinsey, Montebello, both of Calif., assignors to Arcata Graphics, Los Angeles, Calif.

Filed March 3, 1971, Ser. No. 120,559
Int. Cl. B26d 7/06
U.S. Cl. 83—88 21 Claims



Books are printed in units each comprising two integral books positioned edge to edge and the units are bisected at a shearing station to produce single books on each side of the shearing station. The sheared books from one side of the shearing station are conveyed in a first traveling row with spaces between the successive books and the other books are conveyed in a second traveling row that merges with the first traveling row at the spaces thereof to form a combined row of closely spaced books which accumulate at a collecting station.

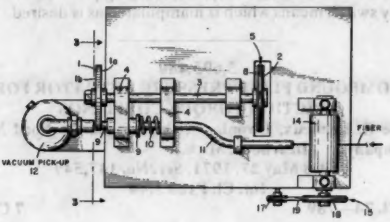
3,693,487

VARIABLE LENGTH STAPLE CUTTER

Vollie L. Murdock, Rte. 2, Box 189-C; Virgil Leonard, 1914 Cedar Bayou Road; Benjamin M. Holleman, 201 Graham St., and John W. Harding, 4806 St. Andrews, all of Baytown, Tex.

Continuation of Ser. No. 750,066, Aug. 5, 1968, abandoned. This application Nov. 12, 1970, Ser. No. 89,041
Int. Cl. B65h 29/24
U.S. Cl. 83—100 3 Claims

The problem of cutting textile filaments into staple while eliminating the fusing of the ends is largely overcome by a variable length staple cutter which feeds the filament through a die into a rotatable cutter wheel having a plurality of openings which are sequentially aligned with the die and form a shear facing with the die. Feed rollers and a vacuum pickup



provide for a controlled advance of the fiber through the die to obtain a uniform staple length.

3,693,488

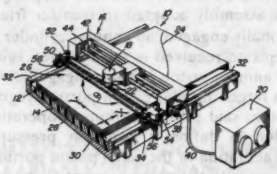
Patent Not Issued For This Number

3,693,489

APPARATUS FOR CUTTING SHEET MATERIAL

David R. Pearl, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., East Hartford, Conn.

Filed March 25, 1971, Ser. No. 127,994
Int. Cl. B26d 5/00
U.S. Cl. 83—374 9 Claims



Apparatus for cutting layups of sheet material and including an elongated table for supporting a layup, a main carriage supported for movement longitudinally of the table and a cutting tool supported on the main carriage for movement therewith and relative thereto in cutting engagement with the layup. The main carriage and the cutting tool move in response to positioning signals received from a numerically controlled or computerized controller. A pair of power driven hold-down rolls positioned at opposite sides of the cutting tool extend transversely of the table and move with the main carriage and in rolling engagement with the upper surface of the layup. At least one of the rolls is driven so that its tangential velocity at its point of contact with the layup is substantially equal to the lineal speed of the main carriage relative to the table but in the opposite direction. Thus, the one roll has a substantially zero velocity relative to the supporting table at its point of contact with the layup and exerts only a downwardly directed force upon the layup. Both rolls may be driven in the aforesaid manner, or, if desired, one of the rolls may be driven at a slightly different speed than the other roll to impart spreading action to the layup in the vicinity of the cutting tool.

3,693,490

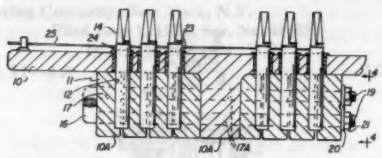
STRINGED INSTRUMENTS WITH ADJUSTABLE FRICTIONAL GRIPPING MEANS FOR THE STRING SUPPORTING PINS

Nathaniel W. Raphael, 207 Brooklyn Blvd., Sea Girt, N.J.

Filed May 21, 1969, Ser. No. 826,345
Int. Cl. G10c 3/10
U.S. Cl. 84—202 6 Claims

A stringed instrument with tuning pins to retain the strings, in which said tuning pins are mounted in a split wrest block

with the pins positioned between the abutting block section and a bolt mounted to retain said block sections in a compressed relationship and to further provide a tight frictional setting for said tuning pins when they have been tuned.



3,693,491

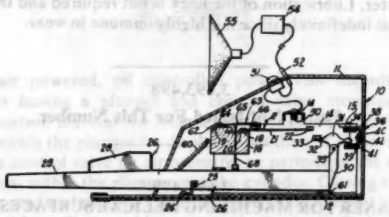
MUSICAL INSTRUMENT WITH CAM CONTROLLING REED VIBRATION

Wade E. Creager, 2120 Arlington Ave., N.E., Atlanta, Ga.

Continuation of Ser. No. 37,118, May 14, 1970. This application Jan. 17, 1972, Ser. No. 218,264

Int. Cl. G10c *3/14*; G10h *3/08*

U.S. Cl. 84—402 **4 Claims**



A musical instrument including a plurality of tuned vibratory reeds, each having an electromagnetic pickup associated therewith and an amplifier for amplifying the output from the reeds; and a plucking assembly for selectively vibrating each of the reeds. The plucking assembly includes a pedal pivotally mounted in the instrument with a contact or plucking head pivotally mounted thereon to engage the reed as the pedal is depressed. A cam is provided for pivoting the plucking head after engagement with the reed to pluck or deflect same and for preventing contact between the head and the reed until the pedal has been released and then depressed again. The electromagnetic pickup includes a permanent magnet selectively positionable with respect to each reed to finely tune same.

3,693,492

KEY GUIDE FOR ELECTRONIC MUSICAL INSTRUMENT

Junji Ohno, Hamamatsh, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

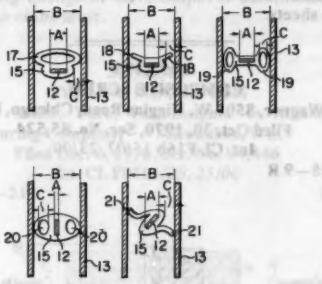
Filed Feb. 8, 1971, Ser. No. 113,345

Claims priority, application Japan, Feb. 9, 1970, 45/12460

Int. Cl. G10c *3/12*

U.S. Cl. 84—436 **11 Claims**

For an electronic musical instrument including a keyboard wherein sound can be produced by depressing a key of the keyboard and vibrato or like effect can be produced by vibrating the depressed key to right and left; a key guide which comprises guiding members which are fixed in position and project at their upper ends into recesses formed underside of the keys, respectively, the upper end of each guiding member having a transverse width substantially narrower than that of the recess, and caps of elastic material each fixed around the upper end of the guiding member and having thin wall portions, integrally formed therewith, projecting laterally beyond the both sides of the cap so as to make slidable contact with inside surfaces of the corresponding key, whereby the thin wall portions of each cap permit the lateral vibration of the key, also serving to properly guide the key in vertical direction when the key is depressed downward.



3,693,493

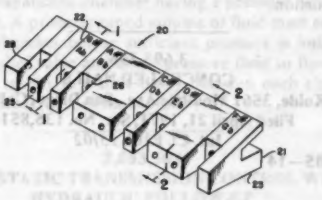
LIGHT BAR INDICATOR FOR KEYBOARD TEACHING DEVICES

Arthur R. Schmoyer, 11708 River Road, Potomac, Md.

Division of Ser. No. 151,729, June 10, 1971. This application June 23, 1971, Ser. No. 155,787

Int. Cl. G09b *15/08*

U.S. Cl. 84—479 **2 Claims**



An instructional indicator for placement on a keyboard includes lights individually focused on the surface of the keys.

3,693,494

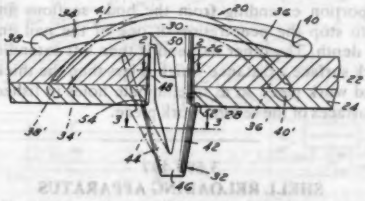
FASTENER

Engelbert A. Meyer, Union Lake, Mich., assignor to USM Corporation, Warren Division, Mount Clements, Mich.

Filed June 3, 1971, Ser. No. 149,690

Int. Cl. F16b *19/00*

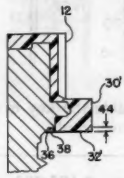
U.S. Cl. 85—5 R **5 Claims**



A one piece, resilient fastener, preferably constructed of a plastic material, having a head and a shank, the head being elongate and longitudinally bowed, and the shank being generally V-shaped with a relatively rigid leg secured to the concave surface of the head, and a relatively flexible opposite leg terminating in a free end portion adjacent the head, the shank legs being provided with laterally extending locking shoulders. The fastener is particularly adapted for securing two sheet-like members in face-to-face relationship, the shank of the fastener projecting through aligned apertures in the

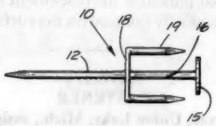
members, with its locking shoulders overlying the aperture marginal edges, and the opposite ends of the bowed head tensioned against the sheet surface spaced from the apertures to retain the sheets.

3,693,495
COMPOSITE SCREW
David P. Wagner, 8501 W. Higgins Road, Chicago, Ill.
Filed Oct. 30, 1970, Ser. No. 85,524
Int. Cl. F16b *15/02, 23/00*
U.S. Cl. 85—9 R **8 Claims**



A composite threaded fastener in which a metal body including a head and washer portion having ribs formed thereon are encapsulated with a molded plastic outer surface, the outer surface and the head and washer interlocking through the interaction of the plastic and rib structure on the head and washer portion.

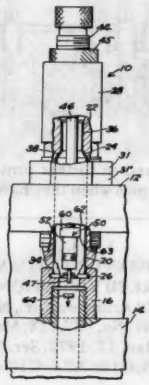
3,693,496
CONCEALED NAILS
Minoru Koide, 3561 Moultrie Ave., San Diego, Calif.
Filed April 21, 1971, Ser. No. 135,851
Int. Cl. F16b *15/02*
U.S. Cl. 85—14 **6 Claims**



The invention is directed to a new type of concealed nail comprising a body section having two ends with an integral flange portion extending from the body sections and positioned to stop the penetration of one of the nail ends at a desired depth. The other nail end is then left extending from the work surface a distance which is less than the thickness of a second work piece so as to eliminate holes in fished or exterior surfaces of the second work piece.

3,693,497
SHELL RELOADING APPARATUS
Harvey A. Jacobitz, Flushing, Mich., assignor to C--H Tool & Die Corporation, Flushing, Mich.
Filed March 4, 1971, Ser. No. 120,855
Int. Cl. F32b *33/02*
U.S. Cl. 86—28 **13 Claims**

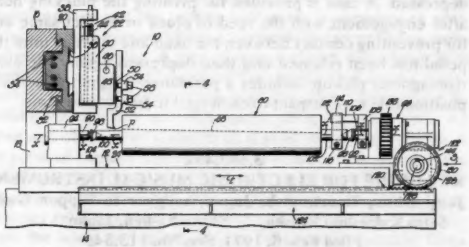
A shell reloading apparatus having an improved expander button which is positioned to expand the bullet-gripping shell neck. A used shell is first inserted into a cavity of the apparatus to reduce the diameter of the shell neck. The shell is then withdrawn from the cavity and over the expander button. A hard metal carbide ring on the expander button engages the inside of the shell neck as the shell is withdrawn from the cavity to thereby expand the shell neck to an accurately controlled



diameter. Lubrication of the neck is not required and the ring can last indefinitely since it is highly immune to wear.

3,693,498
Patent Not Issued For This Number

3,693,499
PLANER FOR MACHINING HELICAL SURFACES OF IDENTICAL BUT OPPOSITELY DIRECTED LEADS ON COMPANION SHEAR DRUMS
James D. Ingham, Thomaston, Conn., assignor to The Hallden Machine Company, Thomaston, Conn.
Filed Sept. 3, 1970, Ser. No. 69,233
Int. Cl. B23d *5/02*
U.S. Cl. 90—29 **1 Claim**



An operationally reciprocating traverse table of a planar, with at least one tool head on a cross rail, carries two parallel pairs of bearing-type end supports for two drums, of which adjacent end supports of the pairs are, through a gear drive connection on the table with a fixed rack, operationally driven through equal angular distances but in opposite directions on each traverse motion of the table, and either driven end support is releasably coupled to the associated supported drum, whereby the tool on the head may be operated to machine on the supported drum on the reciprocating table a helical surface of a uniform lead and in a direction depending on the pair of end supports on which the drum is supported.

3,693,500

FLUID PRESSURE CONTROLLED POWER UNIT

Stanley C. Crandall, Greensboro, N.C., and David B. Puryear, Summerfield, N.C., assignors to Gilbert & Baker Manufacturing Company, New York, N.Y.

Filed June 1, 1970, Ser. No. 41,857
Int. Cl. F15b *21/04, 15/26*
U.S. Cl. 91—4 A 2 Claims

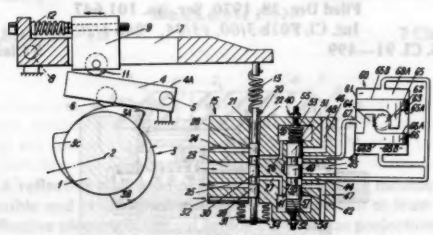
An air powered, oil controlled power unit including a cylinder having a plunger and control valve mounted for reciprocation therein. Air from a supply source pressurizes a liquid within the plunger for displacement thereof, upon opening of a control valve by air pressure, by permitting the oil to flow from within the plunger into the cylinder. Closing of the valve immediately stops plunger displacement. The unit is provided with a displaceable, automatically controlled safety latch and a leg member to prevent rotation of the plunger relative to the cylinder. A float assembly cooperates with the valve to prevent elevation of the plunger when the oil level within the unit drops below a predetermined point.

3,693,501

SERVO-SYSTEMS

Edward J. Ward, Haywards Heath, and Rodney Way, Portslade, both of England, assignors to The Worcester Valve Company Limited, Sussex, England

Filed Aug. 25, 1970, Ser. No. 66,678
Claims priority, application Great Britain, Aug. 28, 1969, 42,853/69; June 26, 1970, 31,179/70
Int. Cl. F15b *13/16*; F01b *7/04*
U.S. Cl. 91—186 9 Claims



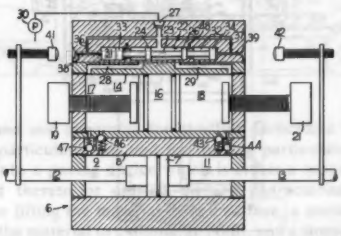
A servo-valve having a range of settings is urged progressively to or from a predetermined setting by a bellows responsive to input-signal fluid pressure. Feed-back from the valve output is to a cam having a cam follower linked by a lever of variable velocity ratio to a spring connected to the valve which biasses the valve towards one end of its range of settings. The relationship between input-signal fluid pressure and valve output is determined by the contour of the cam surface and the relationship between change in input-signal fluid pressure and corresponding change in valve output is determined by the velocity ratio of the lever.

3,693,502

CYCLING MECHANISM

Charles W. Smith, York, Pa., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Dec. 2, 1970, Ser. No. 94,446
Int. Cl. F01l *1/20, 25/06*
U.S. Cl. 91—219 4 Claims



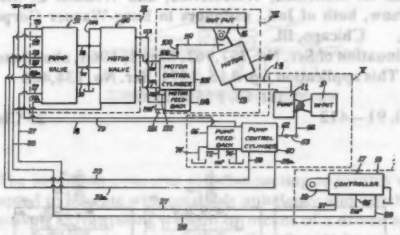
A pressure fluid operated motor moves a predetermined distance in one direction and then a predetermined distance in another direction. The activating pressurized fluid flows through an expansible chamber having a pressure relief valve to the motor. A predetermined volume of fluid must enter the expansible chamber before sufficient pressure is built up to unseat the relief valve and allow pressure fluid to flow to the motor. This results in a time delay between each change in direction of movement of the motor.

3,693,503

HYDROSTATIC TRANSMISSION CONTROL WITH HYDRAULIC FOLLOW-UP

Charles A. L. Ruhl, Wheaton; Edward Meyer, North Riverside, and Probir K. Chatterjea, Des Plaines, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Dec. 14, 1970, Ser. No. 97,899
Int. Cl. F15b *9/10*
U.S. Cl. 91—368 1 Claim



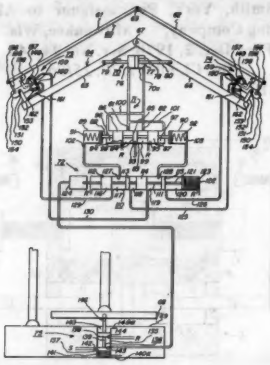
A hydraulic follow-up for use with a hydraulic system placed between a rotating input member and a rotating output member. The hydraulic system is a hydrostatic transmission for driving a tractor, and comprises a hydrostatic pump and a hydrostatic motor driven by the pump. When the hydrostatic pump is angularly shifted with respect to the input member, the shifting is controlled by the hydraulic follow-up, which also shifts the motor in relation to the output member.

3,693,504

MANIPULATOR SYSTEM

Kendall E. Gilbert, 1174 Van Antwerp Road, Schenectady, N.Y.

Continuation-in-part of Ser. No. 779,795, Nov. 29, 1968, abandoned. This application Aug. 19, 1970, Ser. No. 65,138
Int. Cl. F15b *13/16*; F01b *15/02*; F15b *13/042*
U.S. Cl. 91—385 5 Claims



In a manipulator system including a master and a slave skeleton, each of which has a plurality of limbs, and each limb of which has a plurality of serially connected elements, each of the remote ends of corresponding elements of master and slave members are position sensed and brought into correspondence by a respective servo loop. Associated with each joint of a slave leg member are pairs of position sensing devices connected to points remote from the joint. Associated with each corresponding set of leg members is a device for producing a control signal representing grounding of a respective set of leg members. A pair of selector switches are provided. Each selector switch is responsive to a respective control signal for passing the signal from the appropriate position sensing device of a pair to maintain the leg members of a respective set in correspondence.

3,693,505

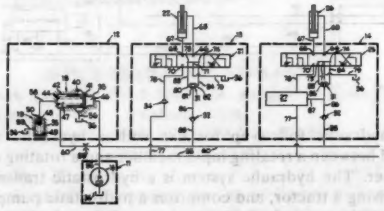
Patent Not Issued For This Number

3,693,506

CONTROL CIRCUIT

Kenneth G. McMillen, Wolcottville, and Wendell E. Miller, Warsaw, both of Ind., assignors to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 757,961, May 1, 1968, abandoned. This application April 15, 1971, Ser. No. 134,466
Int. Cl. F15b *11/00*
U.S. Cl. 91—412 23 Claims



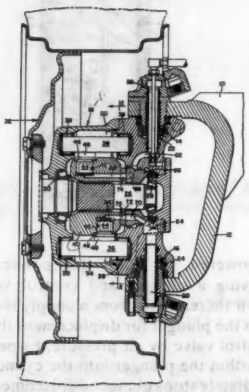
A control circuit for a plurality of manual control valves each controlling a hydraulic motor including a bypass valve and a first logic system including a means for each control valve adapted to select and transmit the load actuating pressure. The circuit includes a second logic system connected to the first logic system which selects the highest pressure signal transmitted by the first logic system and supplies same to a control means for the source of supply pressure to act as a signal pressure to ensure that adequate pressure exists in the fluid pressure supply conduit to the control valves.

3,693,507

RADIAL PISTON HYDRAULIC DEVICE

James Henry Kress, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Aug. 21, 1970, Ser. No. 65,881
Int. Cl. F01b *1/06*, *13/06*; F01l *33/02*
U.S. Cl. 91—492 4 Claims



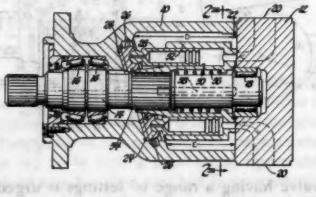
A radial piston-type hydraulic motor has a rotatable inner body element journaled in a fixed housing having a plurality of rollers disposed at equiangular intervals about the axes of the inner body element and axially parallel thereto. The inner body element has a plurality of radially extending cylinders with reciprocating pistons disposed around the inner body element at equiangular intervals preferably greater than the angular intervals between the rollers. The outer end of each piston is provided with a cam engageable with the rollers to cause rotation of the inner body element in response to reciprocation of the pistons.

3,693,508

POWER TRANSMISSION

Edward J. Chondzinski, Detroit, Mich., assignor to Sperry Rand Corporation

Filed Dec. 28, 1970, Ser. No. 101,647
Int. Cl. F01b *3/00*, *13/04*, F04b *1/20*
U.S. Cl. 91—499 5 Claims



A hydraulic pump or motor of the axial piston type having a cylinder barrel rotating against a fixed valve plate perpendicular to the shaft and free to find its own seat against the valve plate has an improved casing which restricts circulation of liquid tending to be carried around with the rotating cylinder

barrel. This reduces the magnitude of the fluid pressure forces exerted on the cylinder barrel by the circulating fluid and which tend to tip the cylinder barrel away from full contact with the valve plate which consequently increases the maximum speed at which the unit can operate.

3,693,509

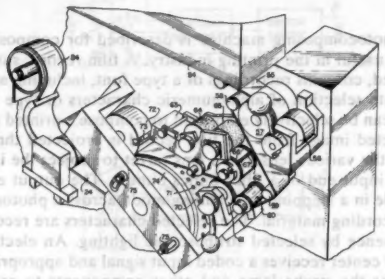
Patent Not Issued For This Number

3,693,510

MANUFACTURE OF APERTURE CARDS

John F. Langan, Pennsauken, N.J., assignor to Langan Aperture Cards, Inc., Pennsauken, N.J.

Filed Nov. 2, 1970, Ser. No. 86,183
Int. Cl. B31b *1/24, 1/62, 1/82*
U.S. Cl. 93—1 G **8 Claims**



Strips of card stock and of film move longitudinally in timed relation with each other. Apertures are formed in the card strip during its longitudinal movement through grinding and cutting zones, the successive apertures being spaced from each other by one card length and each aperture having a thin border of card stock around its edges. The film strip passes through a zone where lines of adhesive are applied to form patterns in the successive sections which correspond to the thin borders of the apertures, after which the film is severed between successive sections and each separate section is applied to one of the apertures in the longitudinally moving strip of card stock. Thereafter the card strip is cut into card lengths and the cards finished by printing or otherwise.

3,693,511

ROAD STUDS

Mieczyslaw Tadeusz Wladyslaw Medynski, Kingfishers, Brookthorpe, Gloucestershire, England

Filed Dec. 16, 1970, Ser. No. 98,771
Claims priority, application Great Britain, Dec. 16, 1969, 61161/69
Int. Cl. E01c *23/16*
U.S. Cl. 94—1.5 **7 Claims**

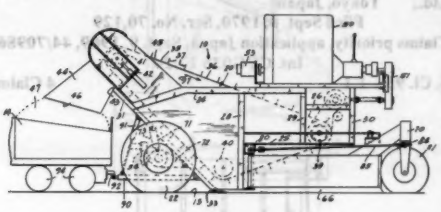
A reflective road stud or 'cat's eye' has a body moulded of flexible and resilient rubber or the like in which at least one reflective element is housed, which element has projections by which it is retained in position and which provide a "snap-in" fixing utilizing the natural resilience of the body material. The body may have an extensive flat under-surface secured to the road by a suitable adhesive, preferably a thermo-set resin sprayed on to the road surface or an emulsified epoxy resin mortar so that work can continue in wet weather as a dry road surface is not required. The reflective element may be a rigid plastics moulding with rows of inset bead like reflecting lenses.

3,693,512

APPARATUS FOR HANDLING PARTICULATE MATERIAL

Fred T. Smith, Aurora, Ill., assignor to Barber-Greene Company, Aurora, Ill.

Filed Jan. 21, 1971, Ser. No. 108,506
Int. Cl. E01c *19/48*
U.S. Cl. 94—46 **13 Claims**



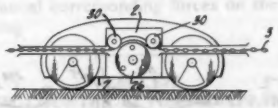
A method and apparatus for handling particulate material which is particularly adapted for loading particulate paving material into a paving device which is either a separate unit connected thereto or carried thereby characterized by a scraper for lifting the material from a surface, a conveyor for elevating the material to a discharge point, and a storage space for storing material. The elements of the material handling device are arranged so that the device will rapidly load a hopper of the paving device to a predetermined level and maintain that level while storing any conveyed material which is in excess of the amount needed to maintain the level, and using the stored material when the amount of material being conveyed by the conveyor decreases below the demand of the material required to maintain the hopper full.

3,693,513

SOIL COMPACTING APPARATUS ADAPTED TO OPERATE WITH ROTATING UNBALANCES

Eberhard Borsutzki, Rotenburg, and Gerhard Liehmann, Lingen/Ems, both of Germany, assignors to Deutsche Schachtbau- und Tiefbohrgesellschaft mbH, Lingen, Germany, by said Liehmann

Filed May 6, 1970, Ser. No. 35,118
Claims priority, application Germany, June 27, 1969, P 19 32 635.3
Int. Cl. E01c *19/28*
U.S. Cl. 94—50 V **8 Claims**



The invention concerns soil compacting apparatus which is adapted to operate with rotatable unbalance and which will be positively driven along a chain by means of a driven sprocket wheel, such chain spanning the soil surface to be compacted. The apparatus of the invention is characterized in that it comprises soil compacting apparatus which is adapted to operate with rotatable unbalance and which will be positively driven along a chain by means of a driven sprocket wheel, characterized in that said apparatus comprises a chain guiding system which is settable in a first position in which the chain will be maintained in engagement with the sprocket wheel in the zone of a circumferential sector, and which is movable from said first position towards a second position in which the chain can be detached from engagement with the sprocket wheel.

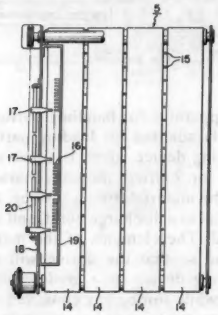
ERRATUM

For Class 95—42 see:
Patent No. 3,693,284

3,693,514
ELECTROPHOTOGRAPHIC COMPOSING DEVICE

Yutaka Koizumi, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Sept. 8, 1970, Ser. No. 70,129
Claims priority, application Japan, Sept. 9, 1969, 44/70986
Int. Cl. G03b 17/24
U.S. Cl. 95—1.1 4 Claims

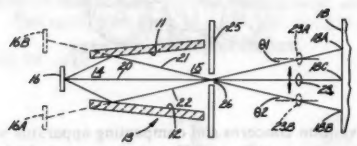


A device for recording a plate indicia representing a number of copies to be printed by the plate is provided for an electrophotographic composing device. The indicia recording means consists of graduated scales and pointers or indicators and are recorded upon a plate together with the image of an original in a portion outside thereof. Irrespective of the magnification or reduction of the original, the dimensions of the indicia remain unchanged so that the detection of indicia may be precisely made. Furthermore, undesired markings other than indicia may be positively prevented.

3,693,515
OPTICAL REFLECTOR SYSTEM

Charles W. Baker, Cedar Grove, N.J., assignor to Vari-typer Corporation, Hanover, N.J.

Filed April 30, 1971, Ser. No. 139,112
Int. Cl. B41b 21/08, 21/12
U.S. Cl. 95—4.5 R 25 Claims

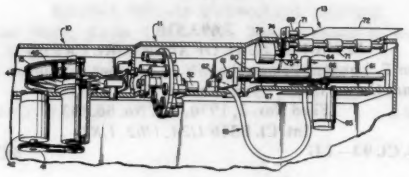


An optical reflector system is disclosed utilizing a plurality of reflecting surfaces forming a diverging tunnel to project a substantially uniform intensity on an optical surface spaced from the reflector system. The invention is suitable for use with optical projection systems and is able to compensate for the effects of other optical components within the projection system. The reflector system is applicable to high speed character projection as used in the photo-composition and photo-type setting arts.

3,693,516
PHOTOCOMPOSING MACHINE WITH FLEXIBLE FIBER OPTICS SCANNING MEMBER

Edward A. Aron, Needham, Mass.; Louis E. Griffith, Hampstead, N.H., and James A. Tidd, Haverhill, Mass., assignors to Graphic Systems, Inc., Lowell, Mass.

Filed Nov. 20, 1969, Ser. No. 878,368
Int. Cl. B41b 17/10
U.S. Cl. 95—4.5 R 6 Claims

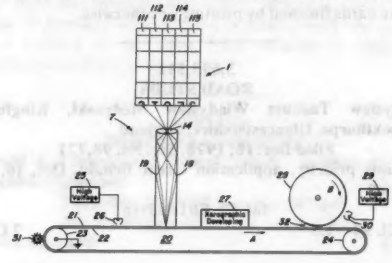


A photocomposing machine is described for composing a master useful in the printing industry. A film record, suitably mounted, contains recordings of a type font, including an appropriate selection of alphanumeric characters or type faces which can be selectively employed to compose a printed page. A selected image from the film record is projected through one of the various lenses in a lens turret to project the image on the input end of a fiber optics bundle. The output end is movable in a stepping or scanning mode across a photosensitive recording material. The selected characters are recorded in sequence by selected stroboscopic lighting. An electronic control center receives a coded input signal and appropriately activates the strobe lamp and other components to provide selection of the alphanumeric character as well as timing of the selection to provide justification.

3,693,517
PRINTING APPARATUS

Harold E. Clark, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Dec. 23, 1969, Ser. No. 887,666
Int. Cl. B41b 21/24
U.S. Cl. 95—4.5 5 Claims



Printing methods and the apparatus therefor are provided in accordance with the teachings of the present invention. According to one embodiment of this invention a radiant energy source selectively transmits radiant energy through a plurality of character patterns arranged in columns and rows. The character patterns are adapted to move relative to the source so that radiation modulated by predetermined ones of the character patterns is selectively applied to a plurality of input paths of an optical positioning means. The optical positioning means includes optical tunnel means which acts to position radiation received at any of a plurality of input paths thereto to a single output location. Photoreceptor means is located at the output location of the optical positioning means whereupon modulated radiation applied to any of the input paths of the optical positioning means is communicated to and imaged

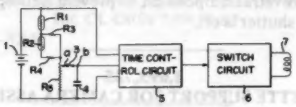
upon such photoreceptor means. The photoreceptor means thereby receives modulated radiation corresponding to selected character patterns. The photoreceptor means may then be developed and the images present thereon transferred to print receiving means.

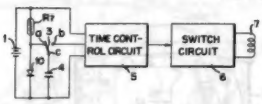
3,693,518

MEMORY CIRCUIT OF AN ELECTRIC SHUTTER

Takeo Yamada, Tokyo, and Shigeo Ono, Yokohama-shi, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jan. 2, 1968, Ser. No. 695,200
Int. Cl. G01j *5/30*; G03b *7/08*
U.S. Cl. 95—10 CT **13 Claims**





An exposure control arrangement for a camera having an objective lens and a shutter moveable between closed and open positions is disclosed. A light intensity to voltage conversion means is positioned behind the objective lens for converting essentially each value of the intensity of the light passing through the objective lens during use of the camera to a voltage having a value essentially linearly proportional to a logarithm of the value of said intensity, and a capacitor memory means is selectively coupled to the conversion means for storing this voltage. Switch means are provided for selectively coupling the capacitor memory means to the conversion means during intervals when light passing through the objective lens is incident on the conversion means and for disconnecting the capacitor memory means from the conversion means when the light passing through the objective lens is not incident on the conversion means. The camera shutter is actuated by a control means which is coupled to the capacitor memory means and which controls the open time of the shutter in accordance with the voltage stored in the capacitor memory means.

3,693,519

Patent Not Issued For This Number

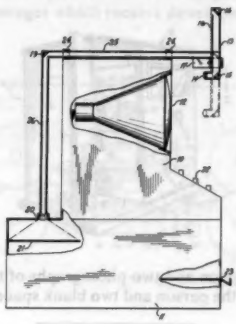
3,693,520

COPIER SYSTEM

Gerald M. Goldman, 185 Bronx River Rd., Yonkers, N.Y., and Sherman Smith, 811 Keene Lane, Woodmere, L.I., N.Y., assignors to said Goldman, by said Smith

Filed June 4, 1969, Ser. No. 830,300
Int. Cl. G01d *9/42*; H01j *29/89*
U.S. Cl. 95—12 **3 Claims**

This invention provides a unique system for capturing the image of a cathode ray tube (CRT) and transferring it to a copier machine. Cathode ray tubes have many uses, one being part of a terminal device for a computer, another being the screen of an oscilloscope and one other being part of a television set. Sometimes a permanent image is desired of what is displayed on a CRT. This is often referred to as a hard copy.



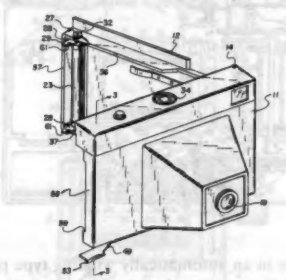
This invention provides for the transfer of the image displayed on the CRT screen to a copier machine.

3,693,521

LATCH AND PRESSURE-APPLYING DEVICE

Donald M. Harvey, and Chester W. Michatek, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed April 2, 1971, Ser. No. 130,752
Int. Cl. G03b *17/50*
U.S. Cl. 95—13 **9 Claims**



A self-processing camera is provided with a novel latch and pressure-applying device that releasably latches the camera's loading door in its closed position and applies resilient nip pressure directly to the film processing members without imposing substantial corresponding forces on the door or the camera housing.

3,693,522

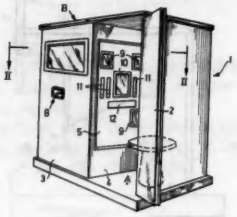
AUTOMATIC COUNTER-ACTUATED APPARATUS FOR TAKING AND DEVELOPING PHOTOGRAPHS

Luigi Chiesa, Turin, Italy, assignor to Morena S.A., Fribourg, Switzerland

Filed May 21, 1971, Ser. No. 145,730
Claims priority, application Italy, May 23, 1970, 68775 A/70
Int. Cl. G03b *17/50*
U.S. Cl. 95—14 **9 Claims**

Coin-operated apparatus for photographing a person in a cubicle and developing the photograph has two cameras, a first one for taking a single large photograph and a second one for taking four small photographs, a reel of reversible paper which passes through first one camera and then the other camera, two slide projectors to hold photographic slides for photographing in two of the four small photographs and program selectors. The second camera has four separate lens assemblies and four screened-off compartments. Program selec-

tor means provides for selection of either a single large photograph or four small photographs of the person or two photo-



graphs of the person and two photographs of the slides or two photographs of the person and two blank spaces.

3,693,523

AUTOMATICALLY WINDING TYPE PHOTOGRAPHIC CAMERA WITH A ROTARY SHUTTER

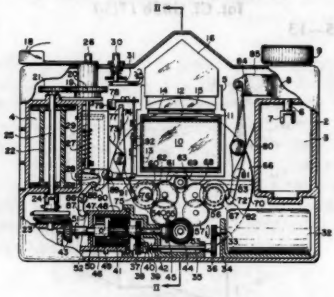
Shohei Tenkumo, and Yoshio Kuramoto, both of Sakai-shi, Japan, assignors to Minolta Camera Co., Ltd., Osaka-shi, Japan

Filed Feb. 18, 1971, Ser. No. 116,542

Claims priority, application Japan, Feb. 18, 1970, 45/13623

Int. Cl. G03b *19/04, 9/26*

U.S. Cl. 95—31 EL **5 Claims**



The shutter in an automatically winding type photographic camera comprises a rotary shutter which rotates intermittently only in one direction, places the shutter charge into practice while in the process of stopping, and effects the exposure when it rotates. The rotary shaft of the shutter plate in said rotary shutter is supported substantially at its center directly beneath the exposure opening of the camera; the lowermost end of the turning track of said shutter plate is substantially coincided with the bottom of the camera body and the uppermost end thereof is located beneath the eye piece portion of the finder of the camera. In the space beneath said exposure opening there are disposed a shutter driving mechanism having a prime mover for interlocking with said rotary shaft and an automatically winding mechanism for interlocking with said prime mover.

3,693,524

SHUTTER SAFETY DEVICE IN A CAMERA PROVIDED WITH AN ELECTRIC SHUTTER

Koichi Furuta, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

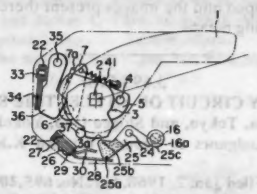
Filed Sept. 10, 1971, Ser. No. 179,486

Claims priority, application Japan, Sept. 19, 1970, 45/82118

Int. Cl. G03b *17/00*

U.S. Cl. 95—31 EL **4 Claims**

A safety device for an electric shutter in a camera is disclosed. The device is comprised of a wind-up lever which operates a power switch for turning the electric shutter on and off. The lever is movable through an angle of idle rotation between a retracted and extended position for respectfully



turning the shutter off and on. The device also included a device for preventing actuation of the shutter release when the lever is in its retracted position to prevent photography when the electric shutter is off.

3,693,525

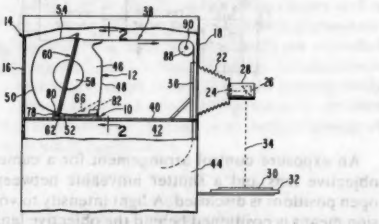
CASSETTE SUPPORT FOR CAMERA ASSEMBLY

Walter W. Barber, 31830 Trevor Ave., Hayward, Calif.

Filed Sept. 16, 1971, Ser. No. 181,132

Int. Cl. G03b *1/42, 17/30, 19/04*

U.S. Cl. 95—31 CA **10 Claims**



Structure for supporting a film cassette in the housing of a camera assembly wherein the apparatus includes a flat plate having a pair of opposed edges. The plate has a pair of projections near one of the edges and an aligning member near its opposite edge. The projections are adapted to engage a horizontal base flange on the cassette and the member is disposed in an aligning recess in the bottom of the cassette. The projections prevent rotation of the cassette relative and along the plate as film is removed from the cassette.

3,693,526

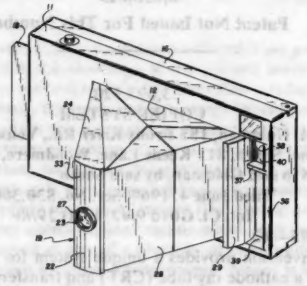
COMPACT FOLDING CAMERA

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,469

Int. Cl. G03b *17/04*

U.S. Cl. 95—39 **2 Claims**



A self-processing photographic camera includes a box-like housing provided with a lens support door that is hinged to the

housing at one end and which supports the camera lens at its opposite end. A collapsible bellows provides a light seal between the door and the housing and permits the door to move between an open position in oblique relation to the casing and a closed position at which the lens end of the door is adjacent the front wall of the casing but extends somewhat forwardly thereof. A novel supplemental door cooperates with the lens support door to releasably retain the latter in its closed position and to protect the camera lens from dirt or accidental damage.

3,693,527

CAMERA ACTUATOR MECHANISM WITH AN ELECTRONIC TIMER

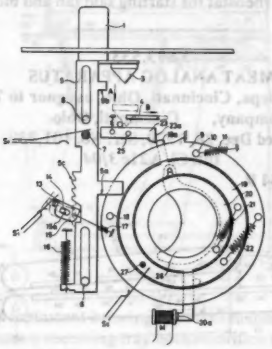
Mutsuhide Matsuda, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1970, Ser. No. 36,713

Claims priority, application Japan, May 20, 1969, 44/38867

Int. Cl. G03b *7/08, 9/62*

U.S. Cl. 95—53 E **7 Claims**



In the camera actuator mechanism disclosed, two series main switches serve to energize an electronic timer. One of the switches is normally closed. A shutter release holds the other switch open. As the shutter release is depressed to snap a picture it first performs preliminary functions other than opening the shutter. During this stage of depression the shutter release closes the open switch. The shutter release forms a ratchet-pawl arrangement with a pivotally mounted locking member. When the shutter release reaches a second position from its first, undepressed position, the locking member locks the shutter release in the second position and simultaneously is pivoted by the shutter release to open the normally-closed switch. In that second position the open switch closes. When the shutter release reaches a third position it allows the locking member to pivot around. This releases the shutter release and at the same time allows the normally-opened switch to close. The other switch remains closed. Thus both switches are closed only when the shutter release is depressed to its third position. This prevents needless use of electrical power while the shutter release performs its preliminary function in the first and second position. From its third position the shutter release returns to its first position.

3,693,528

APPARATUS FOR PROCESSING STRIPS OF PHOTOGRAPHIC MATERIAL OR THE LIKE

Hans-Dieter Frick; Erwin Geyken; Peter Dawidowitsch, and Helmut Schausberger, all of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

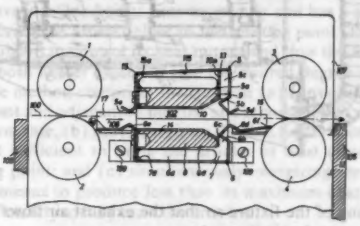
Filed Dec. 11, 1970, Ser. No. 97,273

Claims priority, application Germany, Dec. 12, 1969, P 19 62 421.6

Int. Cl. G03d *3/02*

U.S. Cl. 95—89 R **10 Claims**

Apparatus for treating strips of photographic material with a developing solution which reacts with oxygen has upper and lower chambers defining a channel for lengthwise transport of strips and orifices which discharge streams of developing solution against the respective sides of strips. The chambers further have passages which receive developing solution from



a pump and are bounded by upper surfaces which slope upwardly in the direction of liquid flow toward the respective orifices. Such orifices receive liquid upon complete filling of the respective passages so that the passages are free of air bubbles when the apparatus is in use.

3,693,529

DEVELOPING APPARATUS

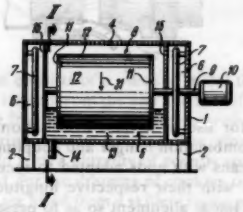
Theodor Stabler, Leinfelden-Oberaichen, Germany, assignor to Autopan Heimerdinger & Stabler O.H.G., Oberaichen, Germany

Filed Sept. 2, 1971, Ser. No. 177,253

Claims priority, application Germany, Oct. 1, 1970, P 20 48 302.7

Int. Cl. G03d

U.S. Cl. 95—93 **9 Claims**



An apparatus for processing photographic sheet materials comprising a container for holding a processing liquid, a shaft rotatable in the container and a pair of parallel disklike walls mounted on the shaft which are spaced from each other to permit a plurality of sector-shaped supporting shells to be resiliently clamped between the two walls. These shells when inserted between the two walls extend coaxially to the shaft, and each of these shells is adapted to carry some of the sheet material to be processed which may be connected to these shells anywhere outside of the container.

3,693,530

VENTILATED FLUORESCENT TUBE FIXTURE

Birger Larkfeldt, Genargen 5, 555 90 Odensjo-Barnarp, and Rolf Petersson, Harsornsgatan 151, 552 66 Jonkoping, both of Sweden

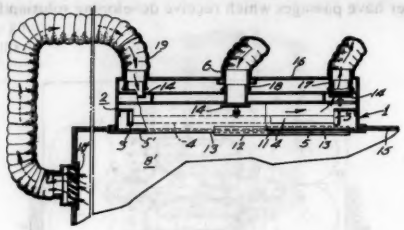
Filed Dec. 29, 1971, Ser. No. 213,665

Int. Cl. F21f *7/00;* F21v *33/00;* F21s *3/02*

U.S. Cl. 98—40 DL **4 Claims**

A fluorescent tube fixture having passages for ventilating air in which the passage for supply air is partitioned from the

tubes and blows the fresh air across the outer surface of the lens to cool the same, and the passage for exhaust air includes



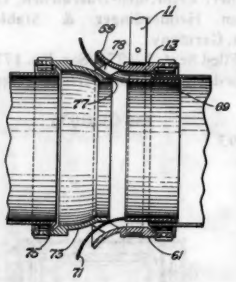
the casing of the fixture so that the exhaust air flows past the fluorescent tubes in the casing.

3,693,531

FLUID DISTRIBUTION APPARATUS PRESERVING ALIGNMENT OF LONGITDUINAL AXES OF FLOW

Matthew Siegel, 4051 Riverside Court, Fort Worth, Tex.

Division of Ser. No. 881,016, Dec. 1, 1969, Pat. No. 3,643,580.
This application Nov. 29, 1971, Ser. No. 202,919
Int. Cl. F24f *7/00*
U.S. Cl. 98—40 C **5 Claims**



Apparatus for use in a fluid distribution system characterized by a combination hanger and coupling adapter having a coupling means with ends adapted to receive and support ends of ducts with their respective longitudinal axes being maintained in linear alignment so as to preserve the velocity component of a fluid flowing therethrough; and fastening means such as spring clips retained in each end of the coupling means and adapted to move outwardly to allow passage of the end of the ducts and to snap inwardly once the ends have passed, retaining the ducts in the coupling means. Great flexibility is attainable since one end of the coupling means may be smaller than the other and may be concentrically or eccentrically positioned to provide a vent means for general or directional distribution of a fluid flowing therethrough. The apparatus enable economical and rapid installation of a fluid distribution system, as well as low operating cost.

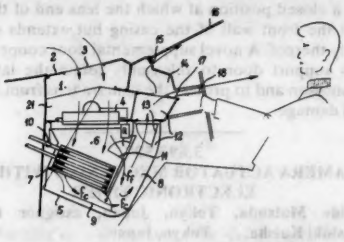
3,693,532

HEATING AND VENTILATING SYSTEM FOR VEHICLES

Andre Colinet, and Jacques Mercier, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, 07, Billancourt and Automobiles Peugeot, Paris, France

Filed Oct. 26, 1970, Ser. No. 84,070
Int. Cl. B60h *1/24*
U.S. Cl. 98—2.07 **6 Claims**

This heating and ventilating system is adapted to deliver air in sheet form and comprises an upper hollow inlet beam associated with a helical fan and motor unit, an upper beam for de-misting and a lower beam for distributing air, which extend throughout the width of the vehicle, a casing comprising a pressurizing chamber, a heat exchanger, a mixing chamber equipped with shutters for controlling the ingress of reheated



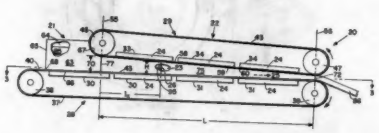
air, the opening of one of these last-named shutters being operatively connected to the inlet means for warm water from said exchanger and, in conjunction with the opening of the other shutter, a rheostat for starting said fan and motor unit.

3,693,533

MEAT ANALOG APPARATUS

Alexander L. Liepa, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 28, 1970, Ser. No. 101,930
Int. Cl. A21c *3/04*
U.S. Cl. 99—234 R **26 Claims**



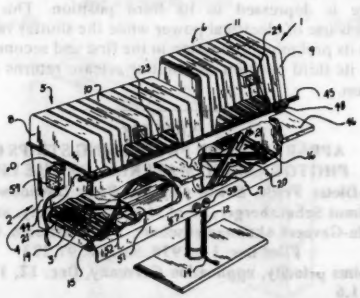
An apparatus for continuously producing a slab of fibrous, meat-like product in which amorphous heat coagulable dough is forwarded from a hopper by converging conveyors which induce substantially unidirectional transverse distension of the dough which distended dough, upon being heated sufficiently to induce coagulation, is transformed into a meat-like slab of substantially parallel, bonded, fibers.

3,693,534

COOKING DEVICE

Norman L. Martin, Lake Quivira, Kan., assignor to Locke Stove Company, Kansas City, Mo.

Continuation of Ser. No. 54,212, July 13, 1970, abandoned.
This application May 26, 1971, Ser. No. 147,236
Int. Cl. B30b *15/00*
U.S. Cl. 99—260 **17 Claims**



A cooking device for outdoor use comprises a base unit having bottom and side walls defining a plurality of side-by-side compartments each having an open top with each bottom wall

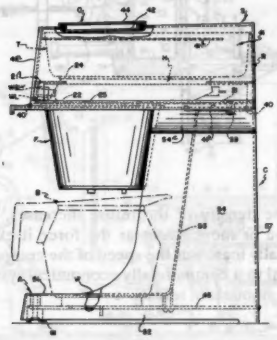
having a plurality of passages therethrough to provide a source of combustion air for fuel burners in the respective compartment. Each compartment has a cover with a portion thereof hingedly mounted for opening and closing same with the covers having a flue passage therethrough for improved draft characteristics. At least one of the compartments has a bake chamber therein.

3,693,535

POUR-IN, INSTANT BREWING ELECTRIC COFFEE MAKER

Edmund A. Abel, Jr., 345 South Island Dr., Rocky River, Ohio

Filed July 26, 1971, Ser. No. 166,104
Int. Cl. A47j *31/057*
U.S. Cl. 99—282 **15 Claims**



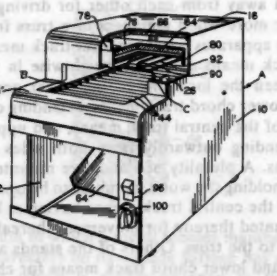
In a pour-in, instant brewing type coffee maker, gravity flow of water, from a receiving tray bottom orifice to an electric resistance heated block of a unit heating the water as it passes to a brewing funnel discharging hot brewed coffee, is controlled by a float-varied orifice structure, and the tray overlies the block for tray water heating by water vapor latent heat; thus eliminating need of a large block mass or excessive heater wattage to provide requisite hot water temperature in an acceptable cycle time, and permitting a simple molded plastic housing design. Baffling in a block water flow top cavity conduces to efficient heat transfer and to reduction of steaming and of attendant noise.

3,693,536

APPARATUS AND METHOD OF TOASTING BREAD LIKE ARTICLES

James G. Carville, Westfield, and John F. Rekesius, Watchung, both of N.J., assignors to Savory Equipment, Inc., Newark, N.J.

Filed June 29, 1970, Ser. No. 50,783
Int. Cl. A47j *37/08*
U.S. Cl. 99—386 **9 Claims**



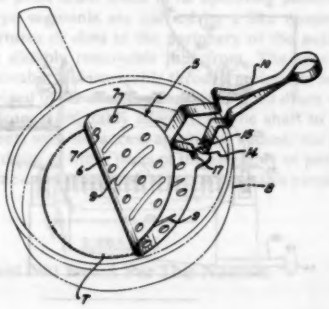
An electric toasting apparatus comprised of a conveyor adapted to support articles to be toasted and having the transverse width and a preselected rate of movement in a longitudinal direction. The apparatus includes at least two radiant heater means disposed adjacent the conveyor, each arranged to provide generally uniform heating conditions across substantially the entire transverse width of the conveyor and along at least a substantial portion of the longitudinal length of the conveyor. One heater runs constantly and has a heat output to bring the articles close to the toasting point. The other is modulated to control its heat output and thus the total output of both heater means to give the desired degree of toasting. The method comprises the steps of: (a) conveying the articles past and adjacent to the first and second heater means at a uniform rate; (b) fully energizing the first heater means in an amount sufficient to bring the articles at least close to the toasting point; and (c) simultaneously energizing the second heater means to produce less than its maximum heat output, but sufficiently to fully toast the articles.

3,693,537

UTENSIL FOR USE IN COOKING TORTILLAS

Charles R. Johnson, Route 11, Box 144K, San Antonio, Tex., and Jack F. Henderson, 554 E. Congress, San Antonio, Tex.

Filed Aug. 3, 1970, Ser. No. 60,544
Int. Cl. A47j *43/18*
U.S. Cl. 99—426 **1 Claim**



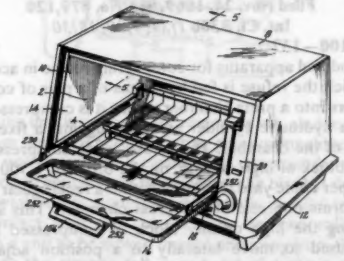
This invention consists of a piece of metal that is basically U-shaped when viewed from the end and as half of a disk when viewed from the front, and to which is secured a handle made of a strip of spring steel or the like. The aforesaid piece of metal is provided with a plurality of equally spaced openings, preferably round, for the draining of cooking oil from the tortillas when they are lifted from a skillet (frying pan).

3,693,538

ELECTRIC OVEN TOASTER CONSTRUCTION

Paul V. Synder, Whitehall, Pa., assignor to General Electric Company

Filed Nov. 19, 1970, Ser. No. 90,890
Int. Cl. A47j *37/04*
U.S. Cl. 99—447 **11 Claims**



An electric oven toaster construction wherein two sheet metal side plates are provided with a plurality of slots and

apertures for readily mounting upper and lower reflectors, upper and lower heating elements, and a front door of the oven toaster.

ERRATUM

For Class 99—386 see:
Patent No. 3,693,452

3,693,539

Patent Not Issued For This Number

3,693,540

EXTRACTION APPARATUS

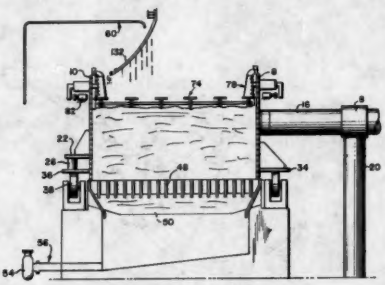
Francis Dambrine, Marcq en Baroeul, France, assignor to Fives Lille-Cail

Filed March 23, 1971, Ser. No. 127,126

Claims priority, application France, March 27, 1970, 7011105

Int. Cl. B30b *9/06, 15/02*

U.S. Cl. 100—110 **11 Claims**



Soluble substances contained in vegetal matter are extracted by diffusion in an apparatus wherein a plurality of cells are successively filled with the vegetal matter at a charging station and displaced during the extraction operation to a discharge station where the exhausted vegetal matter is removed from the cells. Each cell has a glidably mounted cover for compressing the vegetal matter in the cell. A bolting mechanism holds the cover at a desired level in the interior of the cell after the cover has been moved to this level at the charging station to compress the vegetal matter in the cell.

3,693,541

APPARATUS FOR COMPACTING REFUSE

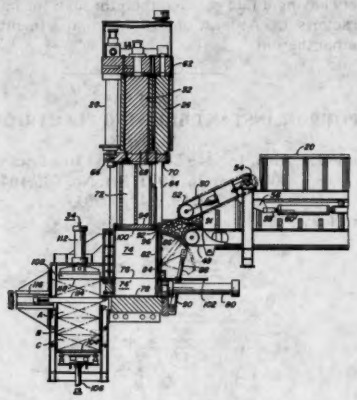
Daniel L. Lombard, 369 Wick Avenue, P.O. Box 177, Youngstown, Ohio, and Daniel A. Katko, 2575 Wick Tibbets Rd., Hubbard, Ohio

Filed Nov. 24, 1969, Ser. No. 879,120

Int. Cl. B30b *1/34, 9/30, 15/30*

U.S. Cl. 100—137 **9 Claims**

Method and apparatus for compacting refuse in accordance with which the refuse is fed by means of a pair of converging conveyors into a press chamber where it is compressed by the ram of a hydraulic cylinder assembly against a fixed wall at one end of the chamber. The refuse, when compressed, comprises a block of high density, on the order of 1,500 to 2,400 pounds per cubic yard, disposed within a rectangular slide box which forms one end of the press chamber. This slide box, containing the high density block of compressed refuse, is then caused to move laterally to a position adjacent the remainder of the press chamber where the high density block is removed; whereupon the slide box moves back into alignment with the remainder of the press chamber preparatory to a succeeding compaction cycle. The apparatus is characterized in that the compaction takes place in stages of increasingly greater force. In the first stage, the press ram moves rapidly into the press chamber under relatively little force.



Then, as the density of the refuse increases, the ram slows down in one or more stages as the force it exerts increases. This materially increases the speed of the compaction process, a factor vital to a commercially economical system for disposing of large amounts of refuse.

3,693,542

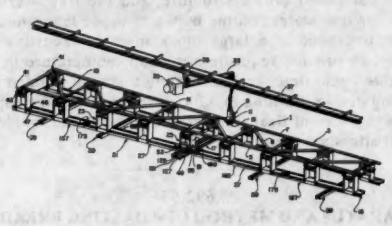
APPARATUS FOR FABRICATING WOOD STRUCTURES

Walter G. Moehlenpah, 1210 South Vandeventer, Laude, Mo.

Filed Jan. 14, 1971, Ser. No. 106,419

Int. Cl. B30b *1/18*

U.S. Cl. 100—231 **24 Claims**



Apparatus for fabricating wood trusses of the type having lower chord members, upper chord members, and web members extending from the lower chord members to the upper chord members, which utilizes a C-shaped press having an upper platen and a lower platen which are relatively movable toward and away from each other for driving nailing plates into two or more wood members of a truss from above and below. The apparatus has floor level track means comprising central track means extending heightwise in relation to the truss between the locations of the lower and upper chord members, lower chord track means extending outwardly from both sides of the central track means, and upper chord track means extending outwardly from both sides of the central track means. A plurality of stands are mounted on the track means for holding the wood members to be operated on by the press, with the central track means having at least one of the stands mounted thereon for movement therealong heightwise in relation to the truss. Others of the stands are mounted on the upper and lower chord track means for chordwise movement therealong. The upper chord track means comprises wing track members extending outwardly from the central track means with the inner ends of the wing tracks being

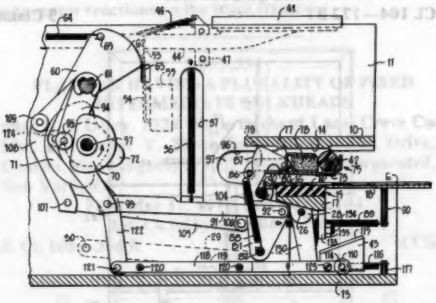
pivotally connected to the movable central track stand for swinging movement in a generally horizontal plane relative to the movable central track stand. Additionally, the apparatus includes outboard track means on both sides of the central track means extending generally heightwise in relation to the truss, and carriage means movable on each outboard track means. The wing track members are supported on the carriage means for movement therewith while swinging about their pivotal connection to the central track stand.

3,693,543

IMPRINTING MECHANISM

Harry F. Noller, Moraga, Calif., assignor to The Singer Company, New York, N.Y.

Filed Oct. 26, 1970, Ser. No. 84,092
Int. Cl. B41f *1/00*
U.S. Cl. 101—287 **5 Claims**



A cam operative mechanism for controlling the platen of a printing device to provide a uniform printing pressure on articles of varying thicknesses. The platen is normally spring-biased in its printing stroke to impress the article to be printed against the print die. During such movement a wedge is moved beneath and into engagement with a pair of yieldable arms carried by the platen to impart an additional movement to the platen, whereby printing pressure is applied. Regardless of the thickness of the article to be printed, an equal printing pressure is effected by the wedge and the arms, carried by the platen, thereafter yield as the printing stroke is completed.

3,693,544

PRINTOUT DRUM

Charles J. Trzyna, Long Grove, Ill., assignor to Charles J. Trzyna, Long Grove, Ill. and Electronic Precision Industries Corporation Inc.

Filed April 2, 1970, Ser. No. 25,138
Int. Cl. B41f *13/10*
U.S. Cl. 101—375 **5 Claims**

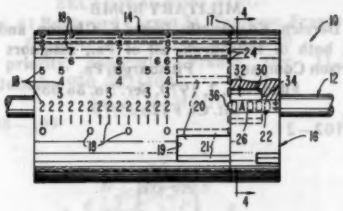
A printout drum in which a metal tubular member carrying a plurality of characters on its outside surface has a centrally positioned shaft which is rigidly fastened to the tubular member by means of a hardenable resinous filler material filling at least a portion of the tubular member.

3,693,545

COAXIAL TYPE DRUMS WITH APERTURES FOR CHANGEABLE TYPE SEGMENTS

Nicholas Kondur, Jr., Rolling Meadows, Ill., and Ronald H. Mack, Plymouth, Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sept. 18, 1970, Ser. No. 73,497
Int. Cl. B41f *13/10*; B41j *1/34*
U.S. Cl. 101—375 **6 Claims**



A printing device for use in print type equipment is provided, having a shaft, a print type drum affixed to the shaft and an auxiliary type drum adjustably mounted on the shaft. The auxiliary drum is secured to the shaft in abutting relation to one end of the print drum when in its operating position. A plurality of type segments are carried by a like number of mounting apertures or slots in the periphery of the auxiliary drum and are slidably removable therefrom. The type segments are removable and insertable through peripheral access apertures provided in the abutting end of the print drum when the auxiliary drum is rotatably adjusted on the shaft to align the type segments with the access apertures, without the need to remove the drum or other parts of the assembly or perform an awkward time-consuming task to accomplish this purpose.

3,693,546

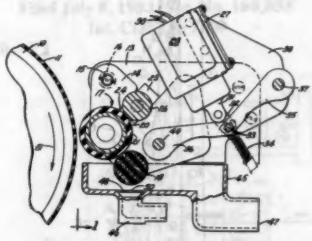
Patent Not Issued For This Number

3,693,547

CLEANING UNIT FOR PRINTING PRESS BLANKET

Edward T. Morgan, Mentor, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed July 27, 1971, Ser. No. 166,376
Int. Cl. B41f *35/06*; B41l *41/00*
U.S. Cl. 101—425 **2 Claims**



A cleaning unit is provided for removing ink, sludge and like matter from the blanket of a printing press or machine. In one form, the unit comprises a cleaner roll mounted for rotation and adapted to contact and be driven by the blanket during its travel. A wick roll is mounted substantially parallel to and in wiping contact with the cleaner roll, the two rolls being adapted as a unit to be moved toward and away from the blanket to place the cleaner roll in and out of contact with the blanket. However, the wick roll is periodically repositioned with respect to the cleaner roll while that roll is out of contact

with the blanket in order to present another wiping portion of the wick roll to contact the cleaner roll.

In this manner, the cleaner roll picks up the ink, sludge and other like matter from the blanket and transfers it to the wick roll. Optionally, as the wick roll continues to be periodically repositioned, the matter collected on the wick roll is removed by a plurality of jets of a cleaning fluid directed against a side of the wick roll that is disposed away from the cleaning roll.

3,693,548

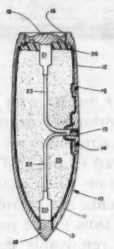
MILITARY BOMB

John E. Dereich, Edgeworth; James E. Gleeson, and Glenn J. Earle, both of Pittsburgh, all of Pa., assignors to H. H. Robertson Company, Pittsburgh, Pa.

Filed Nov. 2, 1970, Ser. No. 86,089

Int. Cl. F42b *25/10*

U.S. Cl. 102—2 **4 Claims**



A military bomb is provided which has an elastomeric tail pad and seal formed from a composition including the reaction product of a mixture of asphaltic filler; hydroxy terminated polydiene; non-volatile organic polyisocyanate.

3,693,549

CONVEYORS

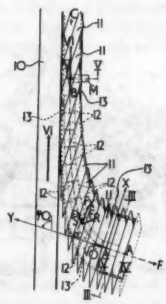
Gerard Cuenoud, and Roland Addoutte, both of Geneva, Switzerland, assignors to Dunlop Holdings Limited, London, England

Filed Nov. 9, 1970, Ser. No. 87,711

Claims priority, application Switzerland, Nov. 28, 1969, 17754/69; Great Britain, Sept. 9, 1970, 43,051/70

Int. Cl. B65g *15/22*

U.S. Cl. 104—25 **13 Claims**



A conveyor for passengers and/or freight, formed from a plurality of platforms, the conveyor having high speed and low speed sections joined by variable speed sections. The variation in speed is obtained by relative lateral sliding of the platforms, and the platforms are driven in the variable speed sections by linear motors and speed control is imposed on the exit from the variable speed zones, of which the following is a specification.

3,693,550

Patent Not Issued For This Number

3,693,551

Patent Not Issued For This Number

3,693,552

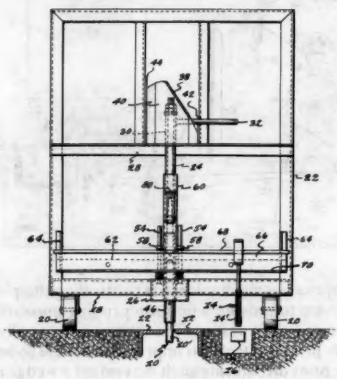
CART STRUCTURE FOR DRAGLINE SYSTEMS

Joseph L. Brown, and Neil N. Brown, both of Charlotte, N.C., assignors to Brown Truck and Trailer Manufacturing Company, Charlotte, N.C.

Filed May 28, 1971, Ser. No. 147,889

Int. Cl. B61b *9/00*

U.S. Cl. 104—172 BT **5 Claims**



A cart structure is provided for dragline systems of the sort now commonly employed for material handling in freight terminals and industrial warehouses. The cart structure features an improved arrangement for related mounting of the dragline engaging drop pin and the switch actuating probe or probes, by which the latter may be lowered and latched in position for switch actuation whenever the drop pin has been lowered for dragline engagement, but are released to an upward retracted position and conditioned against lowered latching whenever the drop in is raised to disengage the dragline.

ERRATUM

For Class 104—172 B see:
Patent No. 3,693,392

3,693,553

MOTORIZED RAILWAY LOCOMOTIVE TRUCK

Richard L. Lich, Town and Country, Mo., assignor to General Steel Industries, Inc., St. Louis, Mo.

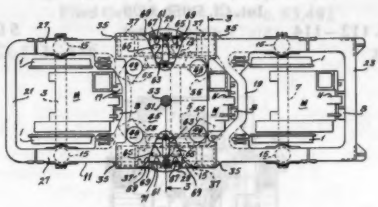
Filed March 3, 1970, Ser. No. 16,236

Int. Cl. B61c *3/00*; B61f *3/05, 5/06*

U.S. Cl. 105—136 **10 Claims**

A multiple axle railway locomotive truck includes a rigid truck frame spring supported on the axles, and a bolster formed with a plurality of upwardly facing nonresilient body supporting surfaces spaced apart longitudinally and transversely of the bolster, the bolster being supported on the truck frame at each side by a pair of elastomeric pad devices each of which is upwardly and inwardly inclined longitudinally of the truck so that their normals converge at a low level, preferably at that of the rail, the combination of the longitudinal spacing

of the body supports and the rail-level convergence of the pad normals ensuring elimination of weight transference resulting from tractive forces. Preferably all motor reaction connec-



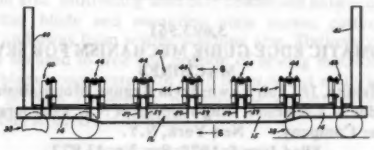
tions to the truck frame are in the same direction longitudinally of the truck from the respective axles whereby to eliminate axle-to-axle weight transference resulting from opposite motor reactions on the truck frame.

3,693,554

FLAT CAR HAVING A PLURALITY OF FIXED INTERMEDIATE BULKHEADS

Walter E. O'Leary, 1324 White Orchard Lane, Creve Coeur, Mo., and Duane V. Thornton, 1538 Sherman Drive, St. Charles, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed May 11, 1970, Ser. No. 36,104
Int. Cl. B65j *1/22*; B60p *7/06*
U.S. Cl. 105—366 R **4 Claims**



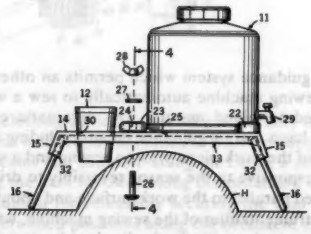
A railway flat car having an end stub center sill structure adjacent each end thereof and a pair of side sills extending the length of the car. A plurality of bulkheads forming load compartments therebetween extend between the side sills and are fixed to the deck of the car for transferring loads between the side sills and the end stub center sill structures. Gates are mounted on the ends of the bulkhead for selective pivotal movement between open and closed positions thereby to restrain lading between the bulkheads against lateral movement when the gates are in a closed position.

3,693,555

FOLDABLE SERVICE TABLE

Donald R. Holtzmann, 3107 Wheaton, Bel Ridge, Mo.

Filed March 4, 1970, Ser. No. 16,484
Int. Cl. A47b *85/00*
U.S. Cl. 108—25 **2 Claims**



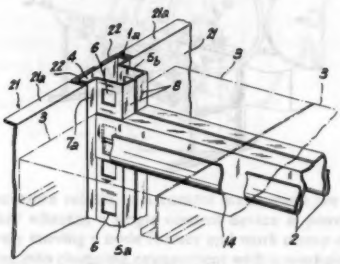
This service table includes a platform supported by inclined U-shaped frames pivotally mounted to each end of the platform and capable of being folded for storage. The ends of the platform are formed into apron portions extending below and outwardly of the pivot axis so that the frames bear against the aprons and stabilize the table in the erected position. The platform includes three stops, one of which is adjustable to hold various sizes of containers securely in place. The platform is also adapted to hold tapered cups.

3,693,556

SECTIONAL SHELVING

Pierre Rous, 61 Boulevard Cornot 31, Toulouse, France

Filed Dec. 2, 1970, Ser. No. 94,320
Claims priority, application France, Dec. 11, 1969, 6942937; June 9, 1970, 7021102
Int. Cl. A47f *5/10*
U.S. Cl. 108—109 **1 Claim**



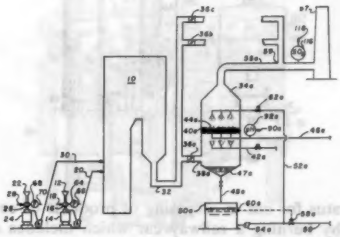
This shelving comprising vertical uprights of T cross-sectional contour, horizontal cross-members interconnecting pairs of uprights and formed to this end with end lugs engageable in perforations of said uprights for supporting the shelving trays, comprises series of plates adapted to be disposed vertically and side by side to constitute the bottom or rear wall or panel of the shelving, each plate having a length corresponding substantially to the distance between two adjacent uprights, the inner face of said uprights being formed with two series of perforations disposed in superposed relationship for receiving the anchoring lugs formed along the vertical edges of said plates.

3,693,557

ADDITIVE FEED CONTROL FOR AIR POLLUTION CONTROL SYSTEMS

John A. Makuch, Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

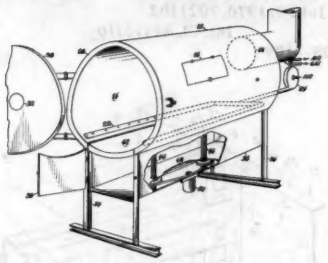
Filed July 8, 1971, Ser. No. 160,855
Int. Cl. F23b *7/00*
U.S. Cl. 110—1 J **9 Claims**



The method of and apparatus for controlling additive delivery to and circulation within an air pollution control system. The system of the invention controls the scrubber recycle flow rate and additive-to-fuel delivery ratio in response to an established pH operating level in the scrubber. The established pH operating level may be varied within limits

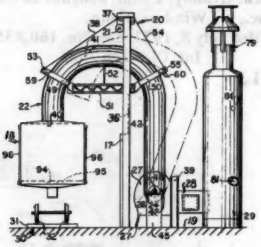
in response to the sulfur oxide content of the gas leaving the scrubber for optimum additive usage.

3,693,558
ASH REMOVAL SYSTEM
Gregory Theoclitus, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.
Filed June 14, 1971, Ser. No. 152,769
Int. Cl. F23g 5/00
U.S. Cl. 110—8 R 8 Claims



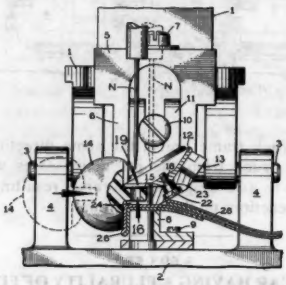
An incinerator constructed with a floor portion which is separate from the incinerator walls whereby said floor may be lowered or raised independently into a closed casing to compensate for the accumulation ash on said floor to thus provide for a sealed combustion chamber having a constant volume.

3,693,559
POLLUTION CONTROL APPARATUS FOR COMBUSTIVE DISMANTLING
Richard H. Allen, Cincinnati, Ohio, assignor to The David J. Joseph Company, Cincinnati, Ohio
Filed Nov. 22, 1971, Ser. No. 200,809
Int. Cl. F23g 5/00, 5/12
U.S. Cl. 110—18 R 15 Claims



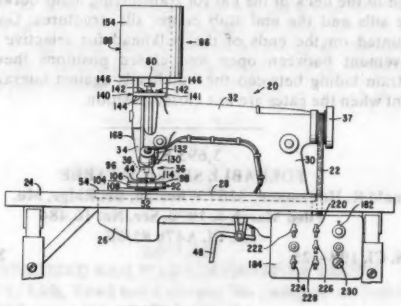
Apparatus for use in disposing of products of combustion created by burning a railway car which includes a snorkel which can be raised and lowered over an opening in the top of the railway car. A fan is connected to the snorkel and draws products of combustion therefrom and discharges the products of combustion into a combustion chamber. The combustion chamber is heated to cause further burning of the products of combustion to eliminate partially burned portions thereof.

3,693,560
SELECTIVE BUTTON HOLDING ATTACHMENT FOR SEWING MACHINES
Martin Weiss, 2100 S.W. 20 Street, Miami, Fla.
Filed May 12, 1971, Ser. No. 142,500
Int. Cl. D05b 3/00
U.S. Cl. 112—114 5 Claims



A selective rotary button holding turret attachment for a power button sewing machine selectively adjustable for holding a predetermined plurality of self shank and metal shank type buttons for the thread sewing operation to fabric positioned under the turret including adjustment means for positioning the turret for the sewing of the selected type buttons to the fabric or other sheet material.

3,693,561
AUTOMATIC EDGE GUIDE MECHANISM FOR SEWING MACHINES
Peter Hrinko, Jr., Fair Lawn; Irvin Krause, Mountainside, and Nandor K. Latincsics, Ringwood, all of N.J., assignors to The Singer Company, New York, N.Y.
Filed June 5, 1970, Ser. No. 43,872
Int. Cl. D05b 19/00, 27/14
U.S. Cl. 112—121.11 6 Claims



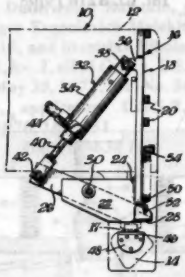
An edge guidance system which permits an otherwise conventional sewing machine automatically to sew a work piece along a predetermined margin. The automatic edge guide mechanism has a margin guidance means including a sensor to sense edge of the work piece prior to sewing and a servomotor operative responsive to the sensor reversibly to drive a guide ring mounted parallel to the work surface and about the stitch forming instrumentalities of the sewing machine, which ring is alternately operative with the feeding mechanism to shift the edge of the work piece into marginal alignment.

3,693,562

OFF-THE-ARM SEWING MACHINE AND CUTTING ASSEMBLY

Billy L. Speer, Campbellsville, Ky., assignor to Spear Systems, Inc., Campbellsville, Ky.

Filed Oct. 23, 1970, Ser. No. 83,482
Int. Cl. D05b *37/04*
U.S. Cl. 112—130 2 Claims



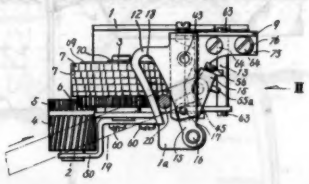
Off-the-arm sewing machine and cutting assembly comprises machine having longitudinally oriented machine arm and cutting assembly including mounting plate secured to sewing machine. Blade mounting arm is integral with mounting plate, and movable cutter blade is pivotally connected at its mid-portion to blade mounting arm for movement in plane substantially perpendicular to longitudinal axis of sewing machine arm. Motivating structure connected between movable cutter blade and mounting plate moves cutter blade toward and away from sewing machine arm. Stationary cutter blade is secured to free end portion of sewing machine arm. Cutter blades cooperate with each other to cut material positioned in path of motion of movable cutter blade when motivating structure is actuated.

3,693,563

ORNAMENTAL CAM SELECTING DEVICE FOR ZIG ZAG SEWING MACHINE

Noboru Kasuga, Kamiichibun-Kata-Machi, Japan, assignor to Janome Sewing Machine Co., Ltd.

Filed Dec. 22, 1970, Ser. No. 100,675
Claims priority, application Japan, Dec. 26, 1970, 44/123000; Dec. 26, 1970, 44/123001
Int. Cl. D05b *3/04*
U.S. Cl. 112—158 A 11 Claims



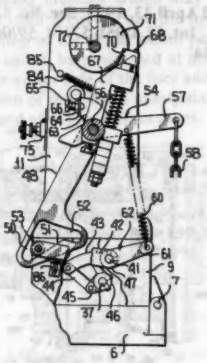
A cam selecting device comprising a plurality of ornament cams packed in a row, a cam follower provided opposite to the ornament cams and shiftable along the cams, a selecting cam for shifting the cam follower along the ornament cams, and a rack mechanism for releasably securing the cam follower in any predetermined positions along the ornament cams so that precise cam selecting relation of the constituent parts may be established to obtain correct ornamental zigzag stitches.

3,693,564

CONTROL MECHANISM FOR SEWING MACHINE

James C. Hsiao, Chicago, Ill., assignor to Union Special Machine Company, Chicago, Ill.

Filed April 30, 1971, Ser. No. 138,979
Int. Cl. D05b *1/24*
U.S. Cl. 112—176 16 Claims



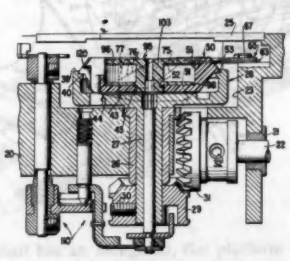
This disclosure relates to a control mechanism for a blind-stitch tacker wherein a single control device is provided for progressively moving a node former and work clamp of a sewing machine into clamping engagement with a workpiece, and further movement of the control mechanism results in the initiation of the stitching operation. The control mechanism includes a multiple lever arm bell crank with different ones of the lever arms thereof actuating different mechanisms of the sewing machine. The control mechanism also includes a cam and cam follower for actuating the node former and work clamp with there being an overcenter position wherein further movement of the bell crank does not result in further movement of the node former and work clamp. When the bell crank has moved to this position, a spring retains the bell crank in its operative position without assistance by the operator. The control mechanism is automatically returned to its inoperative position upon the termination of a predetermined sewing cycle.

3,693,565

LOCKSTITCH LOOP TAKERS FOR SEWING MACHINES

Stanley J. Ketterer, Jamesburg, N.J., assignor to The Singer Company, New York, N.Y.

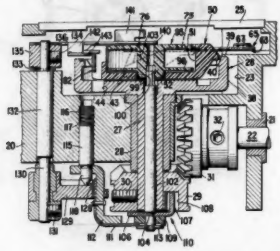
Filed April 20, 1971, Ser. No. 135,671
Int. Cl. D05b *57/08*
U.S. Cl. 112—184 9 Claims



A lockstitch, rotary hook including a stationary bobbin case with a bobbin thread tensioning spring located diametrically opposite the place of loop seizure of the hook and with a passageway for the bobbin thread to the stitching point extending between the bobbin case and the rotary hook and being subjected to periodic bobbin thread pull-off action of

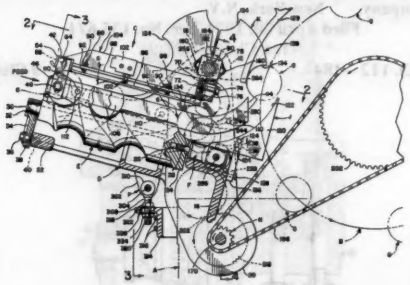
relatively moving surfaces on the bobbin case and the rotary hook.

3,693,566
BOBBIN THREAD REPLENISHING MECHANISM FOR SEWING MACHINES
Stanley J. Ketterer, Jamesburg, N.J., assignor to The Singer Company, New York, N.Y.
Filed April 23, 1971, Ser. No. 136,929
Int. Cl. D05b *57/14, 59/00*
U.S. Cl. 112—184 5 Claims



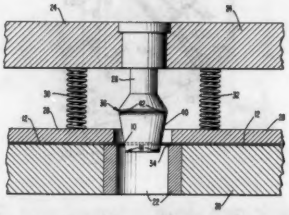
A lockstitch sewing mechanism in which needle thread may be directed to the bobbin for bobbin thread replenishment by a novel route beneath the level of the path of the loop seizing beak of the loop taker together with means for introducing and snubbing the thread on a plain cylindrical bobbin hub of small diameter whereby an appreciable increase in bobbin thread capacity is obtained.

3,693,567
INFEED MECHANISM FOR CAN MACHINERY
Donald P. Dalman, Hastings, Mich., assignor to Gulf & Western Industrial Products Company, Grand Rapids, Mich.
Filed Sept. 29, 1970, Ser. No. 76,578
Int. Cl. B21d *43/16*
U.S. Cl. 113—115 8 Claims



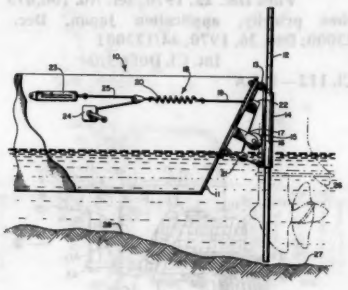
An infeed mechanism for can machinery includes a frame mounting a spiral feed screw, a guide and a transfer wheel. All of these elements are quickly detachable so that the infeed mechanism can be quickly modified for use with different size cans. The frame of the infeed mechanism is pivotally mounted so that the transfer wheel can be moved toward or away from a can machine.

3,693,568
METHOD OF FORMING HEAT EXCHANGER FIN COLLARS
Francis G. McKee, 232 Fernledge Drive, New Kensington, Pa., and Roger C. Haddon, 4175 Ivanhoe Drive, Apt. 513, Monroeville, Pa.
Continuation-in-part of Ser. No. 45,341, June 11, 1970, abandoned, which is a continuation-in-part of Ser. No. 748,725, July 30, 1968, abandoned. This application March 29, 1971, Ser. No. 128,694
Int. Cl. B21d *19/08*
U.S. Cl. 113—118 C 8 Claims



Method of forming integral extending collars from relatively thin aluminum alloy sheet material by incremental and composite flanging and ironing operations on portions of such sheet that overlie an aperture in a female die member by passage of a selectively sized and shaped punch therethrough.

3,693,569
BOAT TURN-BRAKE
Louis E. Chauvin, 735 Esplanade Ave., New Orleans, La.
Filed May 14, 1971, Ser. No. 143,321
Int. Cl. B63b *35/00*
U.S. Cl. 114—0.5 R 8 Claims



The present invention is primarily concerned with a device and its method of use with small fishing, utility and pleasure boats to prevent their grounding on the water bottom or to protect their propulsion unit from contact therewith. This is accomplished by the present invention which comprises an adjustable shaft member fitted in a cooperating support assembly mounted on the boat. The elevation of the shaft is adjusted such that its end strikes the water bottom before the bottom of the boat or its propulsion unit does so.

3,693,570

HYDROFOIL WATERCRAFT

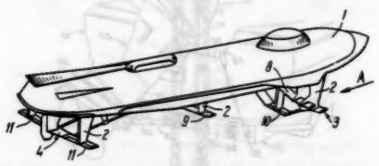
Ivan Ivanovich Erlykin, ulitsa E fremova, 4, kv. 2; Alexandr Ivanovich Vasin, Jubileiny bulvar, 7, kv. 17; Mikhail Mikhailovich Korotkov, Sormovskoe shosse, 4, kv. 2; Vadim Yakovlevich Maximov, ulitsa Svetlayarskaya, 50, kv. 3; Ivan Ivanovich Matveev, ulitsa L. Tolstago, 6, kv. 75; Vladimir Alexandrovich Kadyshev, ulitsa C hernyakhovskago, 8, kv. 6; Valentin Vladimirovich Volkov, prospekt Gagarina, 20, kv. 55; Vladlen Borisovich Firsel, ulitsa Zavodsky Park, 18, kv. 1; Vladimir Dmitrievich Bulatkin, ulitsa Sudostroitelnaya, 4, kv. 1; Igor Evgenievich Malekhanov, ulitsa Dzerzhinskogo, 8, kv. 19, and Stanislav Nikolaevich Suldin, ulitsa Kominterna, 123, kv. 2, all of Gorky, U.S.S.R.

Filed May 20, 1971, Ser. No. 145,180

Claims priority, application U.S.S.R., Dec. 9, 1970, 1498470; Sept. 7, 1970, 1465851

Int. Cl. B63b *1/26*

U.S. Cl. 114—66.5 H 7 Claims



The watercraft has a fore hydrofoil and an aft carried hydrofoil arranged in the "tandem" manner.

The fore hydrofoil includes a central portion and two side portions of which the upper extremities are located above the water line corresponding to the cruising speed of the watercraft.

The angles of deadrise, or lateral rise of the side portions of the fore hydrofoil are diminishing in the direction from the diametral central plane of the watercraft toward the sides thereof. This diminishing of the angles of lateral rise starts from the depth of submergence in respect of the cruising speed water line, not smaller than half a chord of the fore hydrofoil measured in place of intersection thereof with the water line corresponding to the cruising speed.

3,693,571

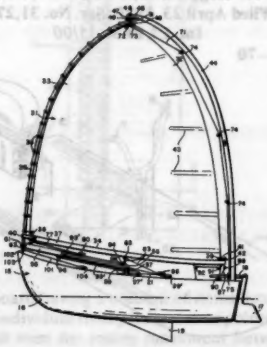
SAIL RIG

Earle F. Hiscock, Old Harbor Road, Chatham, Mass.

Filed Dec. 14, 1970, Ser. No. 97,732

Int. Cl. B63h *9/04*

U.S. Cl. 114—102 19 Claims



This invention relates to a sail rig adapted for use with any sail propelled vehicle which permits both the tack and the clew of the sail to be positioned independently relative to the body of the vehicle (i.e. the hull). This arrangement permits the vehicle to be sailed much closer into the true wind than has heretofore been possible. In the preferred embodiment, the head or peak of a generally symmetrical generally triangular sail is rotatably fastened to a mast structure which mast structure is otherwise out-of-contact with the sail and the tack is fastened to a thrust spar which in turn is pivotally attached to the deck of the vehicle. Preferably the luff of the sail is provided with a stiffening member which may be a curved luff spar where the luff itself is curved and the foot of the sail with a boom. Manipulation of the thrust boom permits the leading edge or luff of the sail to be positioned at any angle of arc up to 90° or beyond on either side of the fore and aft centerline of the hull. The position of the clew is manipulated in the normal manner for a fore and aft rig by a main sheet.

3,693,572

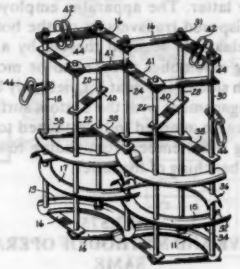
MARINE FENDER

Stanley R. Crook, 16 Grenelle St., Bridgeport, Conn.

Continuation-in-part of Ser. No. 799,159, Feb. 14, 1969, abandoned. This application June 22, 1970, Ser. No. 48,294

Int. Cl. B63b *21/56*

U.S. Cl. 114—219 14 Claims



The invention discloses a marine fender which is of unique scissors-type construction and is made of readily available vehicle tires to provide a rugged flexible fender for boat and pier use and that is easily built to any size.

3,693,573

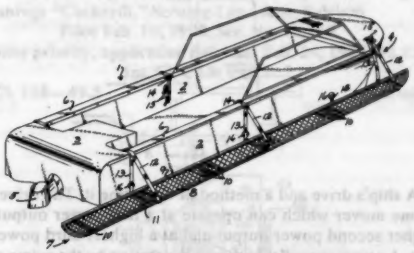
MULTI-PURPOSE BOAT FENDER

Willard J. Murphy, R.R. #1, St. Cloud, Minn.

Filed Aug. 20, 1970, Ser. No. 65,608

Int. Cl. B63b *29/02*

U.S. Cl. 114—219 8 Claims



A boat hull has an elongated, flat platform suspended by straps from the gunwale to serve as a fender along the outside surface of the hull sides. The fender has suction cups which releasably hold it to the hull and with the straps support the platform in a horizontal position. The suction cups are hinged to the inside longitudinal edge of the platform so that the platform can be swung upwards to a vertical position. Additional platforms can be provided for the stern and bow of the boat

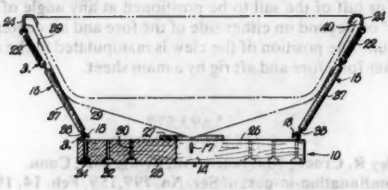
and extendable rods can be connected between various platforms and the suction cups to adapt the assembly for use with various hull shapes.

3,693,574

PORTABLE BOAT LANDING APPARATUS

Roy F. Dickey, 5400 Skiles, Kansas City, Mo.

Filed Nov. 27, 1970, Ser. No. 93,052
Int. Cl. B63b *21/04*
U.S. Cl. 114—219 4 Claims



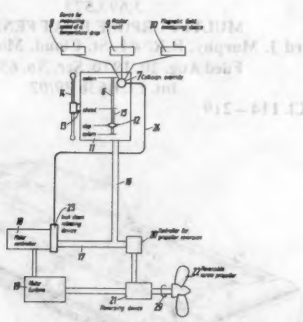
A portable landing apparatus for use on a boat or similar vessel adapted to be beached or driven ashore during landing thereof to protect the bottom surface of the boat during beaching of the latter. The apparatus employs an elongated, rigid member disposed transversely on the bottom surface of the boat and releasably secured thereto by a pair of spring-loaded fastening assemblies adapted to be mounted over the gunwale on each side of the boat for yieldably biasing the rigid member into engagement with the bottom surface of the boat, and a securing cable adapted to be attached to the bow of the boat for holding the member from sliding toward the rear of the boat during beaching of the latter.

3,693,575

SHIP'S DRIVE AND METHOD OF OPERATING THE SAME

Rudolf Mades, Brandenburgicsche Strasse 6, Berlin, 30, Germany

Filed Dec. 22, 1970, Ser. No. 100,676
Claims priority, application Germany, Dec. 27, 1969, P 19 65 794.4
Int. Cl. B63h *3/10*
U.S. Cl. 115—34 R 10 Claims



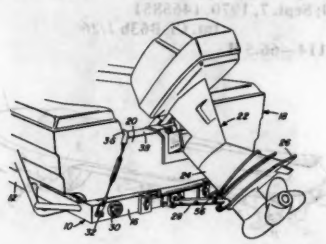
A ship's drive and a method of operating it. The drive has a prime mover which can operate at a first power output, at a higher second power output and at a highest third power output. A screw propeller is driven in rotation by the prime mover and includes several blades which are mounted on it angularly adjustable so that they can be displaced either in leeward or, optionally, in luffward direction between a first, a second, and a third position which respectively correspond to full ahead, astern and emergency full astern drive mode. A control unit is provided which couples the propeller with the prime mover in such a manner that the blades can be displaced towards the first position only in leeward direction and only when the prime mover is at its first power output. When the prime mover delivers its second power output the blades can be displaced towards the second position only in luffward direction. In case of an emergency stop, an override arrangement displaces the blades to the third position in luffward direction and irrespective of their previous position while simultaneously initiating the operation of the prime mover at its third and highest power output.

3,693,576

OUTBOARD MOTOR STABILIZER

James A. Driscoll, 506 Roosevelt, Sand Springs, Okla.

Filed Jan. 6, 1971, Ser. No. 104,422
Int. Cl. B63h *5/12*
U.S. Cl. 115—41 R 10 Claims



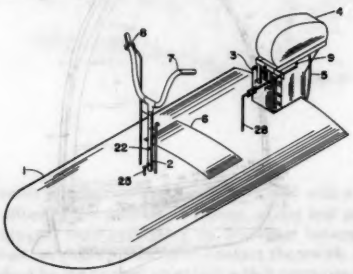
An elongated outboard motor prop including a first forked end for embracingly engaging the front side of the lower end of the upstanding propeller shaft housing of an outboard motor and provided with strap means for releasably securing the propeller shaft housing in the first forked end of the prop. The second end of the prop has a mounting bracket oscillatably supported therefrom for swinging of the prop relative to the mounting bracket about an axis extending transversely of the second end of the prop. The mounting bracket is inturn oscillatably supported from a mounting plate for swinging about an axis relative to the latter disposed at right angles to the first mentioned axis and the mounting plate is provided with means for at least semi-permanent securement to the rear transverse cross member of a trailer frame. This mounting of the prop enables the latter to be used as a prop in securing an associated outboard motor in a tilted position or to be swung to an out of the way position extending along and disposed behind the rear transverse frame member of the associated boat trailer.

3,693,577

MOTOR DRIVEN AQUATIC DEVICE

Martin Sade, 407 Rogers Ave., Glen Burnie, Md.

Filed April 23, 1970, Ser. No. 31,272
Int. Cl. B63b *35/00*
U.S. Cl. 115—70 6 Claims



A balance-steered motor-driven aquatic device having a single hull with a partial tunnel and adjustable height outboard

motor mount means astern, and a rigid, vertically telescoping handle bar post for a standing operator forward, with a pressure-grip throttle control including deadman safety cut-off integral with a handle on the post.

3,693,578

Patent Not Issued For This Number

3,693,579

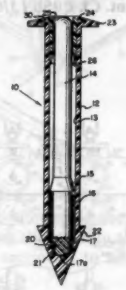
TEMPERATURE INDICATOR

George G. Kliewer, Fresno, Calif., assignor to Commodity Marketers, Inc., Fresno, Calif.

Filed Nov. 12, 1964, Ser. No. 410,603

Int. Cl. G01k *11/06*

U.S. Cl. 116—114.5 **10 Claims**



A temperature responsive device having an extensible indicator rod or staff which is held in place within a bored shell by a ring of fusible material disposed within a generally toroidal chamber formed between confronting annular grooves on the staff and the shell adjacent complementally nestable end portions thereof.

3,693,580

MEMORY BOARD

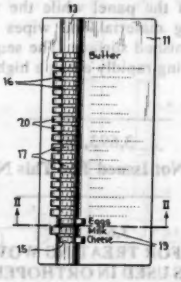
Walther Thierer, Nagold, Germany, assignor to Firma Adolf Hofele, Nagold, Germany

Filed Aug. 27, 1971, Ser. No. 175,449

Claims priority, application Germany, Sept. 3, 1970, G 70 32 909.8

Int. Cl. G09f *9/00*

U.S. Cl. 116—134 **4 Claims**



A memory board having a column of items listed on its face and having an individual rotary indicator or pointer positioned abreast of each item for rotary movement between angular positions in which each pointer may either be angularly positioned to designate its associated item or else placed in an inoperative position. The board is formed with a rearwardly opening groove which is bridged by a plurality of relatively spaced apart bearing strips defining internal bearing surfaces disposed on a common cylinder having its cylindrical axis forwardly of and parallel to the board, the opposite circumferential ends of said strips being connected to the board at opposite sides of the slot. Rotary indicators having pointers projecting through the spaces between adjoining bearing strips have oppositely directed co-axial bearing portions journalled in relatively adjacent bearing strips respectively. The distances between the circumferentially directed ends of the respective bearing strips are somewhat less than the diameters of the bearings to be received therein, and the respective indicators and their said bearings are of annular resiliently deformable construction, whereby they may be snap-fitted into operative positions in the bearing strips.

3,693,581

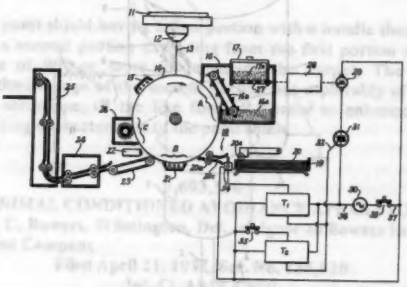
TONER DISPENSER CIRCUIT FOR ELECTROSTATOGRAPHIC APPARATUS

Donald J. Quant, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Oct. 29, 1970, Ser. No. 85,049

Int. Cl. G03g *13/00*

U.S. Cl. 118—7 **11 Claims**



In an electrostatographic reproduction apparatus, a toner control system is provided for regulating the quantity of toner supplied to the developer station, said control system operating in response to signals produced by the copy counter switch and employing an electric timing mechanism for controlling the duration of application of the toner to the developer mechanism.

3,693,582

APPARATUS FOR APPLYING A METAL COATING TO AN ELONGATED METAL ARTICLE

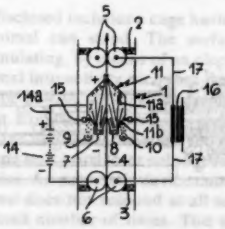
Leon Joseph Eugene Delcour, Liege, and Dominique Thomas Francois Streel, Cointe-Sclessin, both of Belgium, assignor to Cockerill-Ougree-Providence Et Esperance-Longdoz, en abrege "Cockerill," Seraing-Leg-Liege, Belgium

Filed Feb. 10, 1970, Ser. No. 10,169

Claims priority, application Belgium, Feb. 24, 1969, 42,121

Int. Cl. C23c *13/12*

U.S. Cl. 118—49.5 **11 Claims**



An apparatus for applying a metallic coating to an elongated metal article. The article to be coated is transported

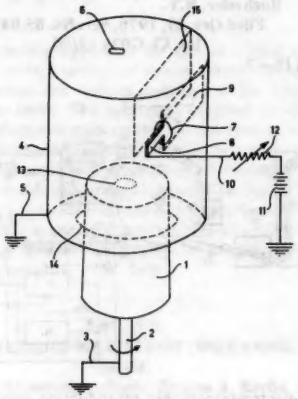
through an enclosure with closure gates at the ends. A source of ionized metallic atoms is positioned around the article. Also within the enclosure is a tubular deflection screen at a potential which is of the same polarity as the ionized atoms. The deflector screen deflects back towards the article the ionized atoms produced by the source which do not strike the article when emitted by the source.

3,693,583

VAPOR DEPOSITION APPARATUS

Emile Vanderschueren, Schagen, Netherlands, assignor to European Atomic Energy Community (Euratom), Brussels, Belgium

Filed April 22, 1969, Ser. No. 818,270
Claims priority, application Belgium, June 28, 1968, 60325
Int. Cl. C23c *13/12*
U.S. Cl. 118—49.5 **1 Claim**



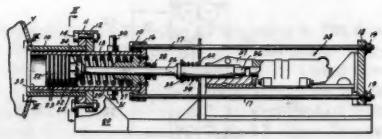
An apparatus for producing monocrystalline deposits on a substrate by vacuum evaporation. The source of vapor to be deposited is a rotating cylinder which is off center with respect to an electron beam which strikes it and causes vaporization. The chamber walls are grounded and the substrate is held at a low positive potential rather than a high negative potential as is the usual practice.

3,693,584

APPARATUS FOR IMPREGNATING POROUS SUBSTRATES WITH TREATING LIQUIDS

Jackson H. Barnett, Jr., 84 N. Crest Road, Chattanooga, Tenn.

Division of Ser. No. 877,403, Nov. 17, 1969, Pat. No. 3,632,409. This application July 12, 1971, Ser. No. 161,775
Int. Cl. B27k *3/10*
U.S. Cl. 118—50 **6 Claims**



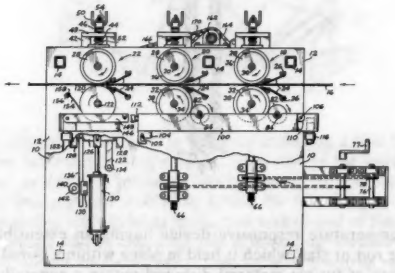
Apparatus for impregnating a porous substrate such as wood with a treating liquid including a cylinder which is arranged to be secured to a pressure vessel, a free piston reciprocable in the cylinder and being exposed to the pressure conditions in the vessel, a striker pad and striker rod assembly cooperating with the free piston, a bias spring acting on the striker rod to urge the rod and striker pad in opposition to the fluid pressure acting on the piston, damping means urging the rod against the striker pad, and impacting means for periodically striking the rod, the damping spring having a fundamental frequency differing from the fundamental frequency of the piston-striker pad-bias spring assembly so that the piston delivers variable amplitude energy pulses into the vessel.

3,693,585

ROLL COATING APPARATUS FOR PANEL PRODUCTS

Darrel Lon Reeve, and Stanley Mortensen, both of Eugene, Oreg., assignors to Georgia-Pacific Corporation, Portland, Oreg.

Filed Aug. 6, 1970, Ser. No. 61,587
Int. Cl. B05b *13/02*
U.S. Cl. 118—104 **3 Claims**



Roll coating apparatus for coating plywood and other panels comprises coating applicator means and wiping means arranged sequentially for processing the underside of a horizontally positioned panel. The applicator means preferably comprises a roll coater. The wiping means comprises an upper pressure roll, a lower wiping roll, and mounting means mounting the rolls rotatably in axially aligned, cooperating relation a predetermined distance from each other. Wiping roll drive means are connected to the wiping roll for reversely rotating it in a direction opposed to the panel feed direction. The applicator means applies coating material to the underside of the panel while the wiping means distributes the coating material and wipes off the excess to produce a highly finished surface. The sequence may be applied to panels moving rapidly along a high speed production line.

3,693,586

Patent Not Issued For This Number

3,693,587

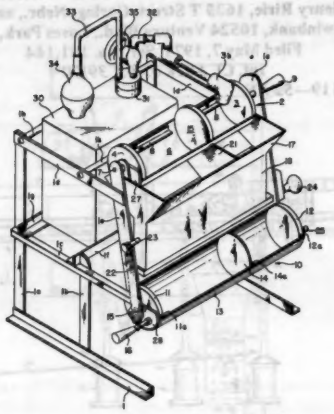
APPARATUS FOR TREATING WOVEN PLASTIC BANDAGES USED IN ORTHOPEDIC CASTS

Roger Anderson, 5421 First Ave. S., Seattle, Wash.

Filed April 10, 1969, Ser. No. 815,085
Int. Cl. B05c *3/09, 5/00*
U.S. Cl. 118—304 **4 Claims**

Disclosed herein are an apparatus and method for uniformly wetting knitted plastic bandages used to form orthopedic casts and splints with measured amounts of treating solution in which portions of the fibers making up the bandage are soluble in certain chemical solutions. The apparatus comprises an

upper tray rotatable about its axis for holding a measured amount of the treating solution or fluid, a lower tray rotatable about its axis for holding a roll of bandage material, and dis-



tributing means positioned between the upper and lower trays for uniformly distributing the treating solution over the bandage. The tray may be sectioned to handle bandages of different widths.

3,693,588

APPARATUS FOR THE INTERIOR COATING OF A CELLULOSE TUBE

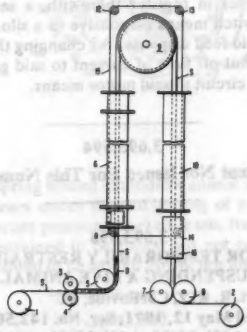
Gunter Gerigk, Oberursel/Taunus, and Wolfgang Klendauer, Wiesbaden, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Division of Ser. No. 783,892, Dec. 16, 1968, Pat. No. 3,556,701. This application Nov. 5, 1970, Ser. No. 87,129

Claims priority, application Germany, Dec. 18, 1967, P 16 21 990.2

Int. Cl. B05b *13/6*; B05c *7/04, 8/04*

U.S. Cl. 118—407 **2 Claims**



This invention relates to an apparatus for the continuous interior coating of a tubular material which comprises a pair of squeeze rolls through which the tube is passed in a substantially horizontal direction, a guide roll for deflecting the tube into a substantially vertical direction, heating means through which the tube passes in the substantially vertical direction, and a second pair of squeeze rolls through which the tube passes after leaving the heating means.

3,693,589

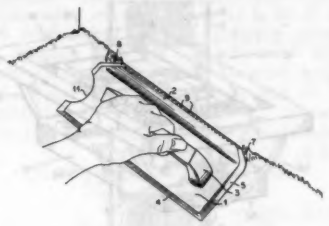
PAINT SHIELDS, PARTICULARLY FOR SHIELDING CARPETS

Joseph W. Knox, 18 Magnolia Ave., Dover, N.J.

Filed Feb. 26, 1971, Ser. No. 119,207

Int. Cl. B05b *15/04*

U.S. Cl. 118—504 **11 Claims**



A paint shield having a first portion with a handle thereon, and a second portion extending from the first portion at an angle of 90° or more for engaging the carpet. The free lengthwise edge of the second portion has a plurality of cutout, serrations, or the like formed therein to enhance the shielding characteristics of the paint shield.

3,693,590

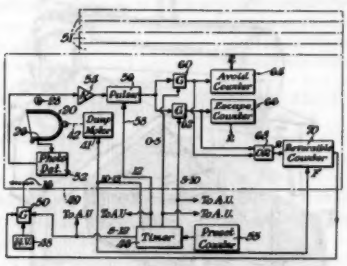
ANIMAL CONDITIONED AVOIDANCE APPARATUS

John C. Bowers, Wilmington, Del., assignor to Bowers Instrument Company

Filed April 21, 1971, Ser. No. 135,920

Int. Cl. A01k *45/00*

U.S. Cl. 119—1 **10 Claims**



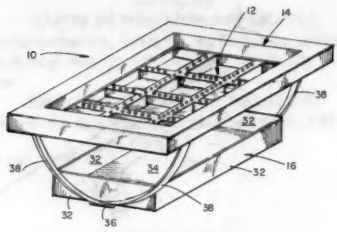
The apparatus disclosed includes a cage having a surface on which a small animal can stand. The surface includes a mechanism for stimulating, by means of an electrical shock or otherwise, the animal into activity such that the animal jumps into a nearby escape unit. A sensor detects the animals entry into the escape unit. Counters responsive to the sensors and to the energizing means determine whether the animal has entered into the escape unit prior to or subsequent to the application of the stimulus. An automatic device cuts off the unit in the event the animal does not respond at all to this stimulus after a predetermined number of times. This apparatus permits the characteristic effects of toxic products, mental retardation, various drugs, other pharmaceuticals and the like to be studied entirely automatically without the need for continuously monitoring the operation by a human operator.

3,693,591

BABY SAVER FOR TROPICAL FISH

Robert Stasio, 2302 85th St., Brooklyn, N.Y.

Filed May 6, 1971, Ser. No. 140,841
Int. Cl. G01k 61/00
U.S. Cl. 119—3 10 Claims



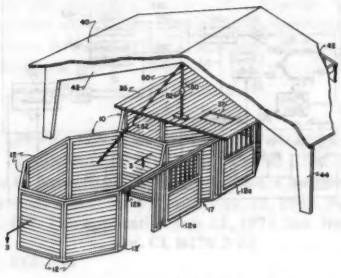
A device for separating newly born fish from other fish in a fish aquarium, the device consisting of a float supporting a generally opaque chamber-equipped frame on its underside and which carries a nesting tray spaced below the opaque frame. The frame is provided with small openings so that new-born fish may escape, from the adult fish and enter safely into the chamber-equipped frame, the openings being designed so that the new-born fish may only pass upward therethrough and cannot return downward again.

3,693,592

HORSE BARN

Glen Melvon Little, P.O. Box 244, Burns, Oreg.

Continuation-in-part of Ser. No. 20,008, May 15, 1970, abandoned. This application Nov. 16, 1970, Ser. No. 89,619
Int. Cl. A01k 01/00
U.S. Cl. 119—16 7 Claims



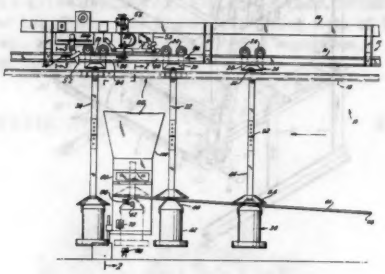
A horse barn containing a plurality of stalls octagonally shaped for anti-casting purposes and serially arranged in one or more rows. The individual stalls are formed of prefabricated wall and door sections comprised of tongue-and-groove wood slates reinforced with a series of tie rods and framed by channel iron members. These modular sections are secured together and to floor anchors by welding. A subroof formed over the top of the stall array provides storage for hay or other feed with a separate upper roof supported over the entire barn structure for providing protection from the elements.

3,693,593

AUTOMATIC POULTRY FEEDING DEVICE

Harry John Ackermann, 332 S. Sycamore, Monticello, Iowa; Louis Dewey Blessin, 2327 Dresden Ave., Rockford, Ill.; Leroy Nicholas Hermann, R. R. #1, Box 193A, Roscoe, Ill.; Max Henry Ririe, 1635 T Street, Gering, Nebr., and Everett John Swinbank, 10524 Ventura Blvd., Loves Park, Ill.

Filed May 7, 1971, Ser. No. 141,144
Int. Cl. A01k 05/02, 39/00
U.S. Cl. 119—52 AF 5 Claims



A poultry feeding device comprising an overhead trolley system, motor means for driving said system, a plurality of trolleys adapted for congruent movement with said trolley system at spaced positions therewith, a covered silo feeder suspended from each of said trolleys, a feed station portion of said trolley system, means for lifting the cover of a silo feeder approaching said feed station, a feed dispenser at said feed station, said dispenser having a discharge end capable of communication with the open upper end of a silo feeder located at said feed station, electrically operated gate means for controlling the flow of feed through said discharge end of said dispenser and a control means on the overhead trolley at said feed station comprising an electrical circuit, a switch means wired to alternately operate said motor means and said gate means, a first actuator wired to said switch means engageable by a trolley having a hanging feeder approaching said feed station for changing the condition of said switch to shut off flow of current to said motor means and to complete the circuit to said gate means for discharging feed into the open upper end of said silo feeder in register therewith, a second actuator wired to said switch means responsive to a silo feeder receiving feed from said feed dispenser for changing the condition of said switch to shut off flow of current to said gate means and to complete the circuit to said motor means.

3,693,594

Patent Not Issued For This Number

3,693,595

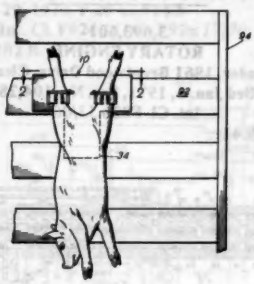
HOLDER FOR TEMPORARILY RESTRAINING AND SUSPENDING A LIVE ANIMAL

Stanly J. Stewart, R. R. 2, Carlinville, Ill.

Filed May 12, 1971, Ser. No. 142,507
Int. Cl. A62b 35/00; A01k 29/00; A61d 3/00
U.S. Cl. 119—98 12 Claims

Holder is used for temporarily restraining and suspending a live animal, such as a pig, by the hind legs during a castration, vaccination, or other treatment procedure. A base having a pair of adjustably spaced vertical webs enables it to be secured to any convenient upright support, such as a rail on a fence or gate, or the side of a farrowing crate or pen. Opposite pairs of elongated jaw members extend forwardly from the base to grip the animal's hind legs when suspended in a head-down posi-

tion. Each pair of jaw members has a plurality of separate, leg-embracing pockets spaced at different distances from the base. Smaller animals are suspended from rearward pockets nearer the base, and larger animals are suspended from forward pockets farther from the base. To accommodate the larger legs of larger animals, the pockets increase in size from rearward to forward positions. The spacing between pairs of jaw members is adjustable for animals of different sizes.



3,693,596

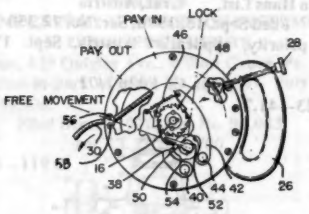
DOG LEASH RETRIEVER

Joseph Croce, and Kurt Bayer, both of 742 Deerpark Ave., Babylon, N.Y.

Filed June 1, 1971, Ser. No. 148,828

Int. Cl. A01k *27/00*

U.S. Cl. 119—109 **5 Claims**



A reel type spring wound extendible animal leash controlled by cam and gears under manual setting of a select lever to have four different positions: locked leash; free movement of leash; leash restrained to be payed but not to be wound up; and leash restrained to be wound up but not unwound.

3,693,597

HIGH-PRESSURE FEEDWATER PREHEATER

Fritz Kelp, 1 Stettiner Str., Erlangen, Germany

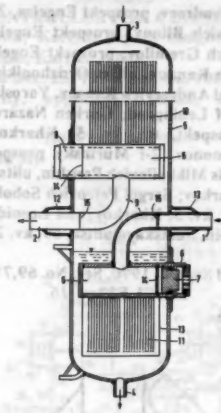
Filed July 19, 1971, Ser. No. 163,653

Claims priority, application Germany, July 18, 1970, G 70 27 187.3

Int. Cl. F22b *1/16*

U.S. Cl. 122—32 **2 Claims**

In a high-pressure feedwater preheater having a steam jacket and containing a collector having a free end extending through the steam jacket and provided with removable closure means at that free end, the collector includes a container part located wholly within the steam jacket, an appendage thereof forming the free end of the collector, and a welding seam located within the steam jacket and securing the appendage to the container part.



3,693,598

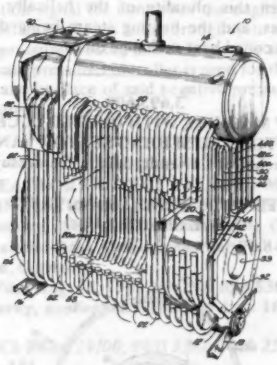
BOILER

John C. Cleaver, Milwaukee, Wis., assignor to Aqua-Chem, Inc., Milwaukee, Wis.

Filed June 29, 1971, Ser. No. 157,981

Int. Cl. F22b *21/00*

U.S. Cl. 122—274 **23 Claims**



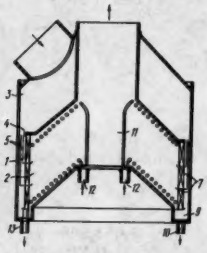
A water tube boiler has rows of inner and outer riser tubes extending along opposite sides of a furnace area. A burner opens into one end of the furnace area. The areas between adjacent riser tubes in each row are closed except in the inner row where a number of such areas are left open to the furnace area at the burner end of the furnace area. A refractory tunnel extends from the burner into the furnace area beyond the open areas in the inner tube rows. In an alternative embodiment two additional rows of riser tubes extend into the furnace area beyond the open areas in the inner tube rows with the areas between adjacent tubes of the additional rows being closed.

3,693,599

INTER-STAGE STEAM SEPARATOR-SUPERHEATER APPARATUS FOR TURBINES OPERATING WITH SATURATED STEAM

Pavel Alexeevich Andreev, prospekt Engelsa, 21, kv. 52; Konstantin Andreevich Blinov, prospekt Engelsa, 96, kv. 67; Dmitry Ivanovich Gremilov, prospekt Engelsa, 95, kv. 63; Boris Izrailevich Kanaun, ulitsa Ordzhonikidze, 37, korpus 1, kv. 10; Andrei Andreevich Kanaev, Yaroslavsky prospekt, 13, kv. 8, all of Leningrad; Gurken Nazarovich Aslanian, Moskovsky prospekt, 63, kv. 5, Kharkov; Pavel Mikhailovich Paramonov, 2-i Murinsky prospekt, 3, kv. 18, Leningrad; Boris Mikhailovich Panshin, ulitsa Danilevskogo, 19, kv. 45, Kharkov; Sergei Petrovich Sobolev, Molchanovsky prospekt, 7, kv. 5, Kharkov, and Leonid Alexandrovich Shubenko-Shubin, Sumskaya ulitsa, 69, kv. 21, Kharkov, all of U.S.S.R.

Filed Sept. 4, 1970, Ser. No. 69,713
Int. Cl. F22g 5/16
U.S. Cl. 122—483 8 Claims



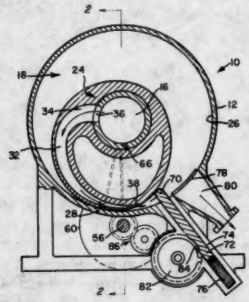
An inter-stage steam separator-superheater apparatus whose separator is annular and whose multi-tube steam superheater is mounted inside the separator and coaxially therewith, the plurality of the helically coiled heat exchange tubes, extending along multiple helices, of the steam superheater, the steam to be superheated being directed into the spaces between this plurality of the helically coiled heat exchange tubes, and the heating steam being directed into these helically coiled heat exchange tubes.

3,693,600

ROTARY MACHINE WITH DUCTED ECCENTRIC ROTOR AND SLIDING STATOR VANE

Ata Nutku, Technical University I.T.U., Gumussuyu, Istanbul, Turkey

Filed Dec. 3, 1970, Ser. No. 94,887
Int. Cl. F02b 53/04
U.S. Cl. 123—8.39 19 Claims



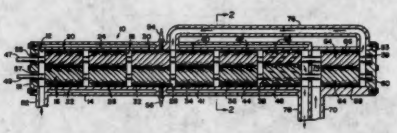
Rotary engines and pumps employing ducted eccentric rotor and one or more reciprocating stator vanes which engage the rotor periphery. Engines may have a central combustion chamber with a spiral rotor duct extending from the combustion chamber to the rotor periphery, air being compressed in the combustion chamber by auxiliary pistons or by a compression duct extending from the rotor periphery. In a pump or hydraulic motor, the rotor has intake and exhaust ducts leading from spaced apertures at the rotor periphery to axial intake and exhaust ports.

3,693,601

ROTARY ENGINE

Kenneth D. Sauder, 1861 Brentwood Drive, Clearwater, Fla.

Filed Jan. 6, 1971, Ser. No. 104,285
Int. Cl. F02b 53/00
U.S. Cl. 123—8.41 15 Claims



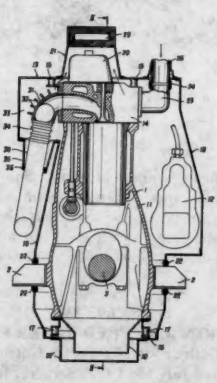
A rotary internal combustion engine including a plurality of rotary pumps arranged in successive communicating fashion such that compression, combustion and expansion of the gases to rotate the engine may take place in a successive, step-like manner. The plurality of rotary pumps may be positioned in substantially linear relation to one another and mounted on one or more common drive shafts serving to rotate the engine. Alternatively, the plurality of rotary pumps may be arranged in a stacked array wherein each pump cooperates with individual drive shaft. An emission control means, also comprising a plurality of cooperatively arranged rotary pumps is arranged in communicating relation with the exhaust end of the engine.

3,693,602

INTERNAL COMBUSTION ENGINE WITH SOUND-PROOFING CASING

Gerhard Thien, and Heinz Fachbach, both of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Sept. 15, 1970, Ser. No. 72,350
Claims priority, application Austria, Sept. 17, 1969, A 8819/69
Int. Cl. F02p 1/02
U.S. Cl. 123—41.7 3 Claims



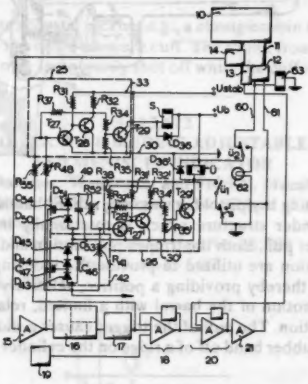
A sound-proofed internal combustion engine having a casing spaced around the engine and having a cooling-air blower driven by the engine arranged inside the casing with inlet and outlet in the casing and an exhaust pipe extending through the casing and exposed to the cooling-air stream of the blower to produce both a sound proofing and heat absorbing effect.

3,693,603

CONTROL SYSTEM FOR FUEL CONTROL UNDER STARTING AND EXCESSIVE SPEED CONDITIONS IN AN INTERNAL COMBUSTION ENGINE

Rudolf Lemanczyk, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 14, 1970, Ser. No. 97,980
Claims priority, application Germany, Dec. 13, 1969, P 19 62 573.1; Aug. 29, 1970, P 20 42 914.5
Int. Cl. F02d *11/10*; F92n *17/00*
U.S. Cl. 123—102 R 16 Claims



A pulse sequence having a frequency proportional to engine speed is converted to a D.C. voltage decreasing in amplitude with pulse frequency. When this voltage has predetermined magnitude, starting fuel control switch circuit energizes a relay causing maximum fuel injection.

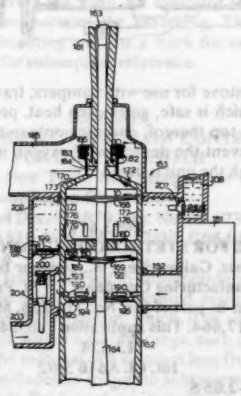
First and second rectifier means having different frequency varying characteristics furnish, respectively, a positive and negative voltage. When combination of positive and negative voltage reaches a determined magnitude, excess speed control switching circuit energizes a relay furnishing a control signal for minimum injected fuel.

3,693,604

RESONANT ENERGY-CONVERSION SYSTEMS WITH FLUID-ENERGY INPUTS

John J. Horan, 420 Quigley Ave., Willow Grove, Pa.

Continuation-in-part of Ser. No. 654,569, July 19, 1967, Pat. No. 3,558,936.
Filed Dec. 1, 1970, Ser. No. 94,063
Int. Cl. F02b *33/00*
U.S. Cl. 123—119 C 20 Claims



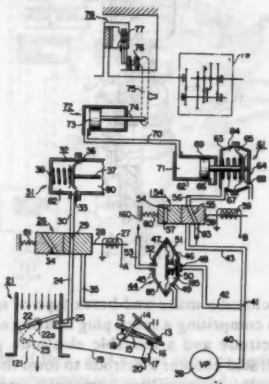
Resonant energy-conversion systems involving high-Q, constant-frequency, mechanical apparatus and providing for energy conversion from fluid sources to mechanical, hydraulic and electrical outputs.

3,693,605

SPEED CONTROLLER FOR A DIESEL ENGINE

Koichiro Hirozawa, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 23, 1970, Ser. No. 100,938
Claims priority, application Japan, Dec. 23, 1969, 44/103979
Int. Cl. F02d *1/04*
U.S. Cl. 123—140 MP 7 Claims



This invention relates to a speed controller for a diesel engine, said controller being arranged to be controlled normally by a pneumatic negative pressure controlled by a throttle valve operatively connected with an engine accelerator pedal or its equivalent means.

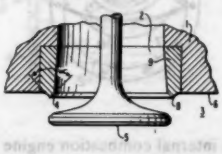
The speed controller is characterized by the provision of a vacuum pump, a pressure controller and change-off valve means which are connected in such a way that upon reception of an instruction signal for control of the engine revolutions, said change-off valve means is/are brought into operation and the negative pressure created and delivered by said pump and modified by said pressure controller is used for the speed control purpose and in place of said negative pressure created at the throttle valve.

3,693,606

VALVE SEAT FOR AN INLET VALVE OF MIXTURE-INDUCING INTERNAL COMBUSTION ENGINES

Horst Hardenberg, Stuttgart-Unterturkheim, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Aug. 15, 1969, Ser. No. 850,536
Claims priority, application Germany, Aug. 16, 1968, P 17 51 908.3
Int. Cl. F02m *29/00*; F01l *3/00*; F02b *23/00*
U.S. Cl. 123—141 16 Claims



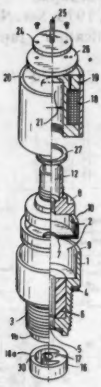
An internal combustion engine which draws-in a fuel-air mixture through the inlet channel controlled by an inlet valve, in which the valve seat is constructed as a flow-disruption edge in order to minimize the overflow of liquid fuel from the walls of the inlet channel into the walls of the combustion space.

3,693,607

MAKE-AND-BREAK SPARK PLUG

Max Pasbrig, Casa Luce, Via Eco, 6644 Orselina, Switzerland

Filed Jan. 11, 1971, Ser. No. 105,403
Int. Cl. F02p 23/00
U.S. Cl. 123—143 R 12 Claims



There is disclosed a make-and-break type of spark plug for piston engines comprising a spark plug housing equipped with a counter electrode and a movable electrode positioned to cooperate with said counter electrode to form therebetween a short-circuit path. An armature is movably arranged within the spark plug housing and a magnetic coil acts upon said armature. Means serve to connect the armature with the movable electrode, and said armature includes an end face directed away from said movable electrode with a pressure equalization compartment being located within said spark plug housing at the region of said end face of said armature facing away from said movable electrode. At least one bore communicates the pressure equalization compartment with the interior of an engine cylinder associated with the spark plug, said at least one bore extending through said armature, said connecting means for said armature with said movable electrode and through both of said electrodes.

3,693,608

END WALL CONSTRUCTION FOR A ROTARY PISTON INTERNAL COMBUSION ENGINE

Kiyosou Neishi, Hiroshimaken, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jan. 15, 1971, Ser. No. 106,836
Int. Cl. F02f 1/20
U.S. Cl. 123—193 C 4 Claims

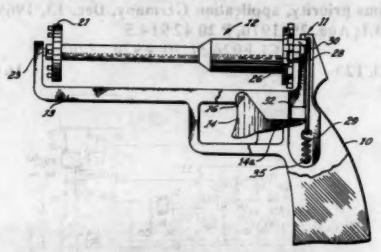
A rotary piston internal combustion engine has a casing including a center wall having trochoidal inner peripheral surface and end walls disposed on both sides thereof. Said end walls are porous at the inner surface at the inside of the outer envelope line of a sliding trace drawn by a ring-shaped oil seal member disposed on the side face of the rotary piston.

3,693,609

REPEATING TYPE RUBBER BAND PROJECTING PISTOL

Hien Vodinh, 6418 Covington Road, Fort Wayne, Ind.

Filed June 17, 1971, Ser. No. 154,022
Int. Cl. F41b 7/02
U.S. Cl. 124—19 8 Claims



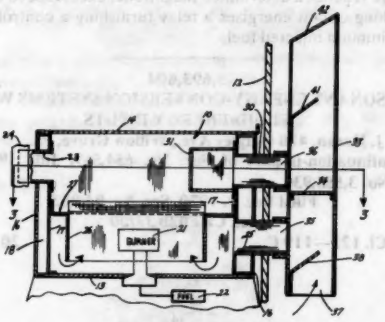
A repeating toy pistol for shooting rubber bands. The pistol has a cylinder structure which is rotationally indexed with each trigger pull. Both the tripper-pull motion and the trigger-return motion are utilized to provide the indexing motion of the barrel thereby providing a positive, relatively lengthened indexing motion of the barrel with a limited, relatively short trigger motion. The pull of the trigger causes a slide to engage and lift a rubber band off of a ridge on the cylinder.

3,693,610

CAMPING STOVE

Merlin W. Ehrlichmann, Minnetonka, Minn., assignor to West Creek Co., Inc., Minnetonka, Minn.

Filed Dec. 10, 1970, Ser. No. 96,944
Int. Cl. F23l 17/04; F24c 3/00
U.S. Cl. 126—85 B 6 Claims



A camping stove for use with campers, travel trailers, tents, or the like which is safe, gives even heat, provides a cooking surface at the top thereof, and uses only outside air for combustion to prevent the depletion of oxygen inside the camper or tent in which the unit is uses.

3,693,611

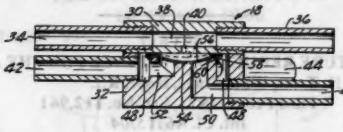
VALVE FOR STETHOSCOPIC MONITORING

William R. Ploss, Gainesville, Fla., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 714,226, March 19, 1968, Pat. No. 3,517,664. This application Feb. 24, 1970, Ser. No. 13,524
Int. Cl. A61b 5/02
U.S. Cl. 128—2.05 S 3 Claims

A pressure-activated, two-way valve means adapted for use in devices for monitoring blood pressure, pulse, and respiration during anesthesia. The valve communicates with a blood

pressure acoustic pickup which is always open, but the pressure-activated feature automatically closes off communication

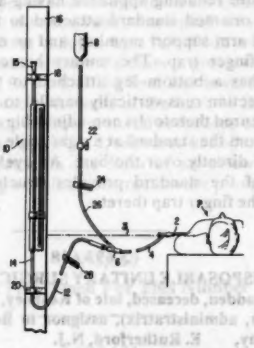


with another acoustic pickup, e.g., a chestpiece, in response to inflation of the blood pressure cuff. The sound from the chestpiece is thereby temporarily shut off while the cuff is inflated.

3,693,612
MANOMETER WITH SLIDING ADJUSTABLE SCALE AND MENISCUS INDICATOR

Joseph F. Donahoe, Waukegan, and Fidel V. Macalalad, Lake Forest, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed April 21, 1970, Ser. No. 30,380
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 D **11 Claims**



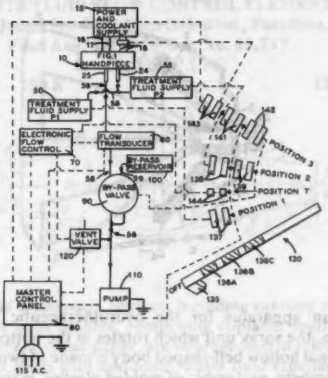
Disclosed herein is an improved manometer in which the calibrated scale for reading the fluid pressure is provided on a transparent sheath rather than directly on the manometer tube, the sheath being slidably mounted on the manometer tube. This sheathing permits the zero point of the scale to be readily adjusted and includes a cylindrical portion integral with a wing, the wing carrying the scale either as a direct imprint or as an insert in the wing. An indicator for marking the meniscus level encapsulates the sheathing. The indicator is slidable on the sheathing and has a mark for establishing the pressure reading for subsequent reference.

3,693,613
SURGICAL HANDPIECE AND FLOW CONTROL SYSTEM FOR USE THEREWITH

Charles Kelman, New York, N.Y., assignor to Cavitron Corporation, Long Island City, N.Y.

Filed Dec. 9, 1970, Ser. No. 96,473
Int. Cl. A61h *1/00*; A61b *17/00*; G05d *11/02*
U.S. Cl. 128—24 A **9 Claims**

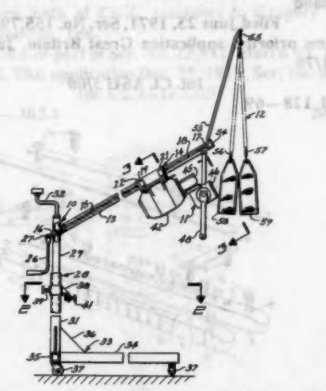
A flow control system is used in conjunction with a surgical handpiece for the removal of unwanted material in a very small enclosed operative site in which it is very critical to maintain a pressure within a certain range, such as in the surgical operation of the removal of a cataract lens from the human eye. The system includes an irrigation subsystem comprising a source of treatment fluid, such as an artificial aqueous solution, at a preselected constant pressure for supplying said fluid to the enclosed operative site via the handpiece. A suspension of the treatment fluid, including any unwanted material, is removed from the operative site by an aspiration subsystem. The aspiration subsystem comprises a pump used to remove the suspension and to overcome the friction and other losses throughout the entire fluid system, a flow transducer for measuring the rate of flow, and a vent valve to reduce the flow in the aspiration subsystem when necessary to assist in maintaining a relatively constant pressure within the operative site. An electronic flow control receives signals from the flow transducer and reacts to certain changes in flow signals by sending a signal to the venting valve.



3,693,614
EXERCISE APPARATUS AND METHOD FOR PARALYTIC PATIENTS

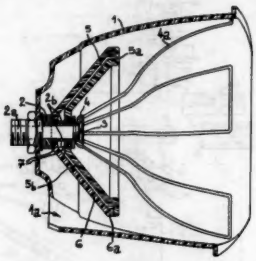
Kenneth A. Schon, 27717 Moran, Mount Clemens, Mich.

Filed May 28, 1971, Ser. No. 147,953
Int. Cl. A61h *1/02*
U.S. Cl. 128—25 R **11 Claims**



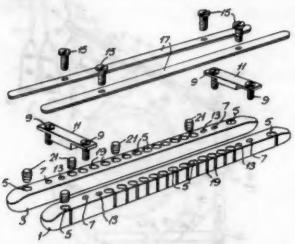
A therapeutic exercising device of the circular or rotary motion type particularly adapted for exercising the arms and legs of a paralytic patient. A method of operating the device is provided for paralytic patients subject to muscle spasms.

3,693,615
HYDROTHERAPEUTIC BREAST TREATING APPARATUS
Camille Dunoyer, 10 Blvd. Jules Favre, Lyon, France
Filed June 10, 1971, Ser. No. 151,874
Claims priority, application France, June 22, 1970, 7022868
Int. Cl. A61h 9/00
U.S. Cl. 128—66 3 Claims



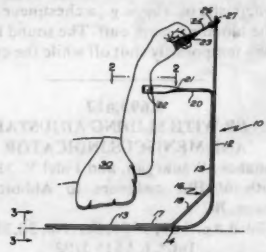
In an apparatus for the hydrotherapeutic treatment of breasts, the spray unit which rotates in the bottom of the conventional hollow bell-shaped body is made of two frustro-conical members, preferably of molded plastics, which are applied against each other, one at least of their facing sides being formed with grooves which realize in the assembly radial canals and tangential nozzles adapted to propel the unit by reaction effect, while the inner frustro-conical member has radial lines of perforations which communicate with these canals to produce the conventional inwardly directed treating jets. The central annular portions of the frustro-conical members are mounted on a common hub whereon they define an inner annular space which receives water under pressure from the fixed tubular shaft of the apparatus through radial perforations provided in same and through radial passages provided in the hub. The latter may be made of two sleeves the abutting ends of which are formed with indentations which protrude axially and radially.

3,693,616
DEVICE FOR CORRECTING SCOLIOTIC CURVES
Robert Roaf, 219 Speke Road, Liverpool, and John Thomas Matthew Wright, 23 Grosvenor Road, Southport, both of England
Filed June 23, 1971, Ser. No. 155,796
Claims priority, application Great Britain, June 26, 1970, 31,141/70
Int. Cl. A61f 5/00
U.S. Cl. 128—69 8 Claims



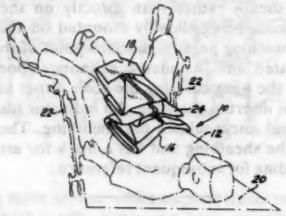
An implantable spinal stabilizing device, developed initially for correcting and maintaining the correction of scoliotic curves, but also useful for fixing spinal fractures and dislocations, involves a pair of spaced parallel rigid bars, each bar having a succession of apertures. The bars are located on opposite sides of the spinous processes, between the spinous and respective transverse processes, and held in this location by tape laced through the bar apertures and around the spinous laminae or transverse processes. The tape is tensioned and secured by plugs in the relevant apertures, and the overall assembly serves to stabilize the spine in a required configuration.

3,693,617
FRACTURE REDUCING APPLIANCE FOR THE ARM
Raymond H. Trott, White Oaks, Hope, R.I.
Filed Feb. 5, 1971, Ser. No. 112,941
Int. Cl. A61f 5/04
U.S. Cl. 128—84 B 3 Claims



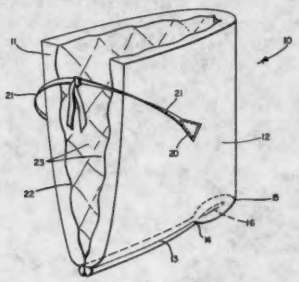
A fracture reducing appliance having a horizontal base, a vertically oriented standard attached to the base, a unitary brace and arm support member, and an expansible and contractible finger trap. The unitary brace and arm support member has a bottom leg attached to the base. Its intermediate section runs vertically parallel to the standard and is fixedly secured thereto. Its non-adjustable arm support section extends from the standard at a right angle positioning it parallel to and directly over the base. An eyelet formed adjacent the top of the standard provides structure for detachably securing the finger trap thereto.

3,693,618
DISPOSABLE UNITARY SURGICAL DRAPE
John J. Madden, deceased, late of Kearney, N.J. (by Marilyn B. Madden, administratrix), assignor to Becton, Dickinson & Company, E. Rutherford, N.J.
Filed July 31, 1970, Ser. No. 59,925
Int. Cl. A61b 19/06
U.S. Cl. 128—132 D 10 Claims



A disposable surgical drape is provided for obstetrical and gynecological operative procedures. The drape consists of a combined plastic tail sheet and nonwoven abdominal cover, and leggings folded into a compact package which may be unfolded directly on a patient without necessitating that the surface in patient contact be handled by the doctor or nurse applying the drape. To this end, the abdominal cover which comprises a rectangular sheet is first longitudinally folded and then fan-folded inwardly from both transverse edges toward the center to form a compact rectangular package. Thereafter the tail sheet and leggings which are affixed to the folded abdominal cover along an edge are transversely fan-folded from both edges and subsequently longitudinally folded to form a second rectangular package some of the folds of which overlie and are interdigitated with those of the first package.

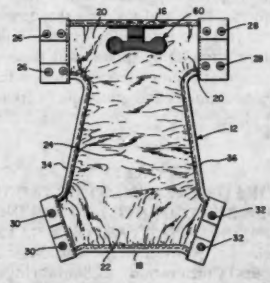
3,693,619
CUSHION PROTECTOR
Harry Albert Williams, 28711 Indies Lane, Saugus, Calif.
Filed Oct. 28, 1970, Ser. No. 84,788
Int. Cl. A61b *19/00*
U.S. Cl. 128—149 8 Claims



Cushion protector for bony protuberances of the human body, composed of convoluted foam having a convoluted surface adapted to fit adjacent to the body of a medical or health care patient. The convolutions are curved and substantially uniform, forming peaks and valleys which are spaced from the base such that the distance ratios from peak to valley, from peak to base and from valley to base fall within critical limits. In the form of a heel protector, a seam is provided extending along the bottom, forward of the heel and toward the toe of the wearer, terminating forward of the back of the heel and leaving an open loop of foam material in the area of and below the heel. A tie strap is provided, anchored at about the middle of the heel protector. In the form of an elbow protector, square ends having a critical construction are provided at both sides of the elbow.

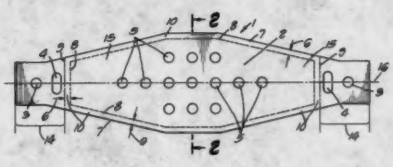
3,693,620
Patent Not Issued For This Number

3,693,621
HOLDING DEVICE AND DIAPER SYSTEM UTILIZING SUCH DEVICE
Paul Jarusik, Wilmington, Del., and Alexander Pociluyko, Glen Mills, Pa., assignors to Scott Paper Company, Delaware County, Pa.
Filed Dec. 24, 1970, Ser. No. 101,292
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 11 Claims



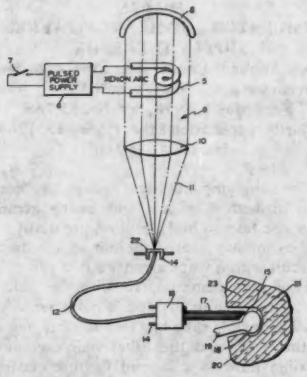
A holding device for retaining an elongated absorbent pad to a supporting garment, the absorbent pad having elongated side regions folded over an elongated center region and secured to the center region by securing tacks. The holding device has a securing section which is secured to a forward marginal edge of the supporting garment. A stem portion is integrally formed with the securing section and extends in a rearward direction toward a rearward marginal edge of the supporting garment. The stem portion terminates in laterally extending members which are adapted to be positioned between the side regions and the center region of the absorbent pad, and rearwardly of and in overlying relationship with the securing tacks.

3,693,622
WASTE FLUID FLOW CONTROL ELEMENT
John Leslie Jones, Sr., 1070 Glen Oak Blvd., Pasadena, Calif.
Filed Aug. 14, 1970, Ser. No. 63,747
Int. Cl. A61f *13/16*
U.S. Cl. 128—290 R 13 Claims



Waste fluid absorption devices, including sanitary napkins, tampons and baby diapers, comprising coplanar multiple ply of thin absorbent tissue paper, are impregnated in selected exterior border areas with non-toxic, waste fluid repellant compositions. The repellant compositions are applied in the minimum concentrations necessary, and produce separate and discrete tissue paper plies which are not easily wet by menstrual and urine fluids. Sanitary napkins comprising coplanar multiple ply of tissue paper disposed in an elongated pattern are impregnated at the exterior border planar area of the napkin, typically for a border area of ⅛–¼ inch width disposed around the menstrual fluid absorptive section. A menstrual tampon comprises coplanar multiple plies of absorbent tissue paper formed into a compressed cylindrical tampon. The tampon end opposite the insertion end of the tampon is impregnated with a menstrual fluid repellant composition, in a concentration sufficient to prevent menstrual fluid flow through the interstices of paper plies of the tampon. The baby diaper is impregnated along the absorbent pad diaper edges.

3,693,623
PHOTOCOAGULATION MEANS AND METHOD FOR DEPILATION
Richard A. Harte, Redwood City, and Edwin A. Amstutz, Santa Clara, both of Calif., assignors to Gregory System, Inc., Houston, Tex.
Continuation-in-part of Ser. No. 23,921, March 30, 1970, abandoned. This application Dec. 25, 1970, Ser. No. 92,598
Int. Cl. A61r *3/00*
U.S. Cl. 128—303.1 20 Claims



Depilation is effected by use of light energy of a selected frequency band concentrated into a flexible fiber small

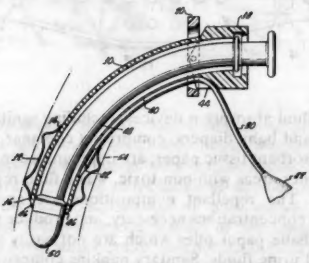
enough to enter the region of the follicle. This effects photocoagulation tissue in a limited region determined by the placement of the fiber.

3,693,624

TRACHEOTOMY TUBE

Donald P. Shiley, 11022 Huntinghorn, Santa Ana, Calif.; Bruce E. Fettel, Diamond Bar, and Kenneth L. Hardy, Oakland, both of Calif., assignors to Donald P. Shiley, Santa Ana, Calif.

Filed Oct. 2, 1969, Ser. No. 863,229
Int. Cl. A61b *25/00*
U.S. Cl. 128—351 **5 Claims**



A tracheotomy tube for insertion into the trachea to support breathing, having a 70° arc between its two ends and including a concave sealing balloon which, when inflated, assumes a cylindrical shape and therefore forms a seal between the cannula and the trachea over an extended axial length, the tracheotomy tube also incorporating an inner cannula which is disposed within and throughout the entire length of the outer cannula and is connected to the outer cannula by a removable fitting which assures a pneumatic seal between the two cannulas, the tracheotomy tube also including a rotatable connector which allows attachment to respiration support equipment in a variety of angular positions. The portion of the tracheotomy tube which extends outside of the patient is hinged to a swivel neck flange which makes the tube adaptable to various anatomies. The tube leading to the sealing balloon is controlled by an isolation valve outside of the patient which allows quick sealing and releasing of the pressure within the sealing balloon.

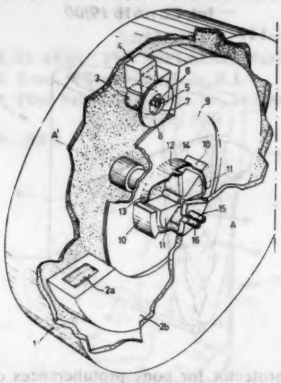
3,693,625

HEART STIMULATOR AND HEART-POWERED ENERGY SUPPLY THEREFOR

Michel Joseph Auphan, Courbevoie, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 1, 1970, Ser. No. 33,745
Claims priority, application France, May 13, 1969, 6915527
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 P **7 Claims**

A device for supplying electrical energy to a heart stimulator which is formed as an air-tight casing arranged to be placed within the human body in close proximity to the heart muscle. The casing has housed therein an annularly arranged magnetic circuit with a rotor arranged in a gap of the circuit. A rotary piston is accommodated within a piston chamber having four compartments divided in pairs. One of the pair is connected via a flexible tube to a first flexible bag arranged at the tip of the heart and the other pair communicates via another flexible hose to a second flexible elastic bag. The elastic bags contain fluid which communicate alternately between the pairs of compartments within the chamber so that upon the pumping action of the heart the piston is caused to oscillate in a rotary motion and mechanical coupling means are connected between the piston and a driving member



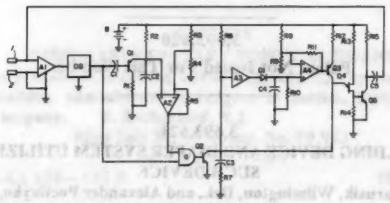
mounted coaxially with the rotor so as to drive the rotor thereby producing electrical signals in response to the movement of the heart.

3,693,626

DEMAND PACER WITH HEART RATE MEMORY

Addison D. Cole, Natick, Mass., assignor to Adcole Corporation, Waltham, Mass.

Filed Nov. 2, 1970, Ser. No. 86,107
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 P **11 Claims**



A demand controlled cardiac pacer including a pair of electrodes for connection with the heart, a variable frequency relaxation oscillator connected to the electrodes, a resetting circuit for disabling the oscillator when heart pulses are produced at a normal rate, and a circuit responsive to the rate of reset for modifying the frequency of the oscillator so that upon heart failure stimulating pulses will be applied to the electrodes at a rate that begins somewhat below the last rate of production of natural pulses and gradually decreases to a fixed minimum rate.

3,693,627

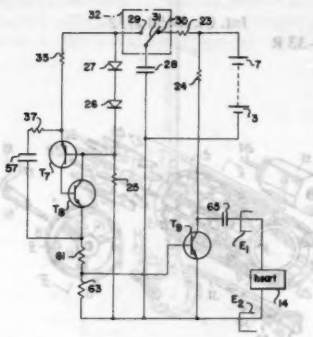
STIMULATOR FOR TREATMENT OF TACHYCARDIA WITH A BURST OF STIMULI HAVING A CONTINUOUSLY VARIABLE RATE

Barouh V. Berkovits, Newton Highlands, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Sept. 14, 1970, Ser. No. 71,799
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 P **8 Claims**

An externally activated implantable heart stimulator. Apparatus is disclosed for supplying to the heart of a patient a burst of stimulating pulses having a repetition rate in excess of the physiological heartbeat range of the patient. The stimulator comprises terminals for connection to the heart, a control-

lable electrical stimuli generator controlled internally by a discharging capacitor and controlled externally by a magnet. The stimulator is particularly applicable to the treatment of



paroxysmal supra-ventricular tachycardias, a rapid heartbeat condition originating in the atrium. The stimulator can be temporarily activated by anyone including the patient being stimulated.

3,693,628

Patent Not Issued For This Number

3,693,629

LIGHTLY PRIZED TOBACCO

James A. Broughton, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed June 1, 1971, Ser. No. 148,967

Int. Cl. A24b *13/00*

U.S. Cl. 131—5 **6 Claims**

A new form of chewing tobacco in cake form but with a low tensile strength such that it may be easily torn, broken, or bitten into smaller pieces.

3,693,630

CIGARETTE MAKING MACHINE

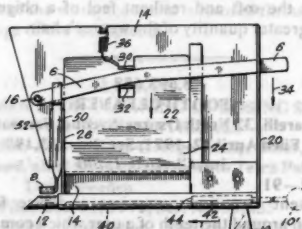
Arnold Kastner, 10220 Armond Lavergne, Montreal 460, Canada

Filed Nov. 23, 1970, Ser. No. 92,060

Claims priority, application Canada, May 11, 1970, 082,438

Int. Cl. A24c *05/42*

U.S. Cl. 131—70 **6 Claims**



A hand-operated cigarette making machine is disclosed. The machine consists of one lever for moving a tobacco compacting member into tobacco compacting position while at the same time moving a retaining lever to retain a cigarette tube on a nipple through which the tobacco wad is injected. A second layer including a spoon is provided for displacing the tobacco wad from the machine into a cigarette tube.

3,693,631

TOBACCO EXPANSION PROCESS

Arnold G. Moore, Winston-Salem, and Donald A. Newton, Clemmons, both of N.C., assignors to Reynold Leasing Corporation, Jacksonville, Fla.

Filed April 28, 1971, Ser. No. 138,039

Int. Cl. A24b *03/18*

U.S. Cl. 131—140 P **11 Claims**

A process of expanding the filling capacity of tobacco which comprises introducing tobacco and a stream of vapors of a compound having an atmospheric pressure boiling point between about −50° and +80° C. into one end of an impregnating zone wherein the temperature of the tobacco and of the vapors introduced into said zone are, respectively, below and above the boiling point of the compound at the prevailing pressure. The tobacco is impregnated with the compound and the impregnated tobacco is withdrawn from the impregnation zone and subjected to vapor-expanding conditions such as immediate treatment with a hot gas to expand the tobacco. The relative amounts of the compound and the tobacco introduced into the impregnating zone and in the impregnated tobacco at the time of expansion is within the range of about 5 to 200 parts by weight of compound per 100 parts by weight of tobacco (dry basis). The flow of vapors to the impregnating zone is controlled with respect to the rate at which the tobacco is introduced into said zone.

3,693,632

TOBACCO-SMOKE FILTERS

Thomas William Charles Tolman, Eastleigh, England, assignor to Brown and Williamson Tobacco Corporation, Louisville, Ky.

Filed April 7, 1971, Ser. No. 132,212

Claims priority, application Great Britain, April 20, 1970, 18,757/70

Int. Cl. A24b *15/02*

U.S. Cl. 131—266 **3 Claims**

A tobacco-smoke filter includes a granular compound or substance comprising silver permanganate and zinc oxide and acting as a catalyst for the oxidation in combination with chloramine-T for preventing poisoning of the catalyst by tobacco-smoke. For instance, the catalyst compound or substance may be interposed between a mouth-end filter section of cellulose-acetate and a filter section of paper soaked in a solution of the chloramine-T.

3,693,633

WAVING HAIR WITH A WATER SOLUBLE THIOL CHAIN CONTAINING POLYMER AND A WATER SOLUBLE DISULFIDE

Gregoire Kalopissis, Paris, and Andre Viout, Montreuil, both of France, assignors to Societe anonyme dite L Oreal, Paris France

Continuation-in-part of Ser. No. 360,730, April 17, 1964, abandoned. This application May 11, 1970, Ser. No. 36,398

Claims priority, application Austria, Apr. 18, 1963, 3150/63

Int. Cl. A45d *7/06*

U.S. Cl. 132—7 **9 Claims**

An aqueous solution containing (a) a water soluble polymer having thiol chains that remain bound to the polymer in solu-

tion and (b) a water soluble disulfide. The process of shaping keratinic fibers by applying to the keratinic fibers said polymer composition and shaping the fibers to the desired shape. Keratinic fibers coated with polydisulfides derived from said composition.

3,693,634

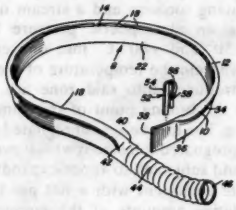
HAIR COLLECTING COLLAR FOR BARBERSHOP USE

Jerry E. Gilbert, St. Louis, Mo., assignor to James Craig Foster, Jr., Fenton, Mo., a part interest

Filed July 19, 1971, Ser. No. 163,769

Int. Cl. A45d

U.S. Cl. 132—9 10 Claims



A readily attachable elastic collar (rubber or plastic material) adapted to be fitted snugly but yieldingly around the neck of a customer whose hair is being cut and which embodies facilities to collect, trap and dispose of the hair clippings. The upper edge is fashioned into a hollow bead whose hollow portion provides a hair conveying duct. An inward convex surface of the bead is provided with a row of hair inlet slots which feed the loose hairs into the duct. One rearward end terminates in a corrugated neck which is connectible with a suction hose. The other end is provided with an extending tongue which provides a hose-end connecting flap and which is adjustably but retentively held in a given position. The lower edge portion of the collar has a channel for reception and support of the upper hem-equipped end of the usual apron.

3,693,635

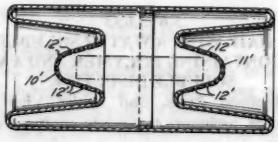
HEATED HAIR ROLLER

William Garrett, New York, N.Y., assignor to Flairescence Ltd., New York, N.Y.

Filed Feb. 2, 1971, Ser. No. 111,833

Int. Cl. A45d *4/14*

U.S. Cl. 132—33 R 5 Claims



A two-piece hair roller is formed so as to provide for an internal cavity. A water activatable heating composition is placed within this cavity so as to heat the roller after the hair has been wound upon it. The two parts may be separate until use, or may be joined.

3,693,636

HAIR CURL SETTING AND DRYING DEVICE

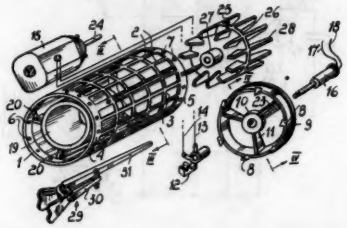
Umberto Tomiati, Via Filippini 19, Verona, Italy

Filed Feb. 8, 1971, Ser. No. 116,714

Claims priority, application Italy, Feb. 10, 1970, 84906 A/70

Int. Cl. A45d *2/12*

U.S. Cl. 132—33 R 1 Claim



A hair curl setting and drying device comprising a cage-like cylinder around which the hair locks are wound and within which an electric motor is housed which propels a fan therein.

3,693,637

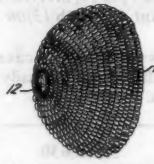
CHIGNON FOUNDATION

Abraham Sidelman, P.O. Box 589, Manchester, Ga.

Filed March 1, 1971, Ser. No. 119,592

Int. Cl. A41g *5/00*

U.S. Cl. 132—55 5 Claims



A chignon foundation or so-called rat is here formed of a knit sleeve of resilient nylon rolled into itself so as to have a central through opening. A captive rubber band surrounds the opening. In use, the wearer pulls her medium long hair through the opening, then spreads the hair over the foundation and pins it in place. The knit nylon foundation imparts to the chignon the soft and resilient feel of a chignon formed wholly of a greater quantity of the wearer's hair.

3,693,638

TOOTH CLEANER

Angelo Ciccarelli, 32 North Osprey Avenue, Sarasota, Fla.

Filed April 12, 1971, Ser. No. 133,199

Int. Cl. A61c *15/00*

U.S. Cl. 132—91 6 Claims

The present invention comprises a device for cleaning between and around the teeth of a user which comprises a pair of slightly diverging arms having dental floss confining means at their outer ends and which terminate in a laterally projecting holding projection to be gripped by the thumb and a finger of the user, and to tightly hold the ends of a piece of dental floss which passes through the dental floss holding means at

the ends of the arms. The device also includes a stabilizing member which engages the arms and rigidly supports them as

well as a suitable guiding element for guiding the ends of the floss into proper relation with the thumb and finger grip.

3,693,639

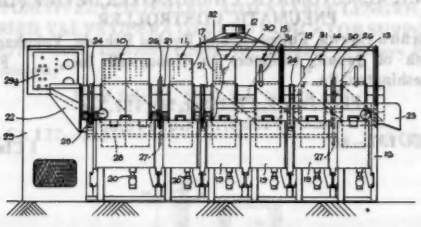
APPARATUS FOR TREATING ARTICLES WITH LIQUID TREATMENT MEDIA

Sydney C. Corbett, Birmingham, England, assignor to The Hockley Chemical Company Limited, Birmingham, England

Continuation-in-part of Ser. No. 705,212, Feb. 13, 1968, Pat. No. 3,481,347. This application Oct. 27, 1969, Ser. No. 869,805. The portion of the term of this patent subsequent to Dec. 2, 1986, has been disclaimed.

Int. Cl. B08b *3/06*

U.S. Cl. 134—69 **3 Claims**



A drum of polygonal cross-section has a hollow spindle secured to each side thereof. The spindles support the drum for rotation thereof about the axes of the spindles and provide means for loading and unloading workpieces to and from the drum. The drum is provided with perforations so that, when it dips into a treatment medium in a tank, workpieces within the drum are exposed to the medium. The drum is oscillated during treatment of the workpieces and is rotated through 360° to effect discharge of the workpieces.

3,693,640

ARRANGEMENT FOR CLEANING OF DOSING SYSTEMS FOR FLUID MATERIALS

Roland Wettlen, Eslov; Hans-George Melle, Hoor, and Jan Palsson, Lund, all of Sweden, assignors to Tetra Pak International AB, Lund, Sweden

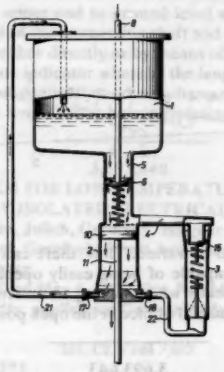
Filed Dec. 21, 1970, Ser. No. 99,835

Claims priority, application Sweden, Dec. 30, 1969, 18062/69

Int. Cl. B08b *9/08*

U.S. Cl. 134—169 R **3 Claims**

A method of and apparatus for carrying out the method of cleaning a dosing system normally used for providing measured amounts of various liquids such as milk and the like, in which a pump is used for the dosing operation, whereby the



entire dosing system is cleaned as well as both sides of a reciprocating piston in the pump and also the periphery thereof.

3,693,641

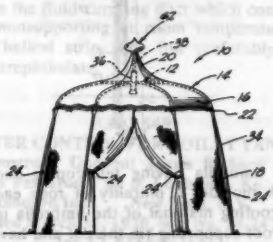
PORTABLE SHELTER

Charles W. Moss, P.O. Box 34, Ann Arbor, Mich.

Continuation of Ser. No. 745,048, July 15, 1968, abandoned. This application March 9, 1970, Ser. No. 17,034

Int. Cl. A45f *1/00*

U.S. Cl. 135—1 R **14 Claims**



A portable screen house which has a flexible frame structure and a cover supported in tension thereon. The cover has screen material for its sides and an impervious dome-shape top portion having an upwardly projecting cone-shape peak at its center. A bulbous ornament element is supported above the cone-shaped peak by the frame structure.

3,693,642

RIB ASSEMBLY FOR FOLDING UMBRELLA

Nobutoshi Kida, No. 1-27, Minami, Nonia-cho, and Kazo Saito, No. 9-374, Ohtori, Naka-machi, Sakai, Osaka Prefecture, both of Japan

Filed March 5, 1970, Ser. No. 16,680

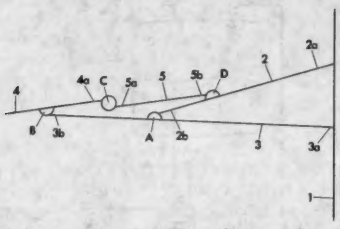
Claims priority, application Japan, Nov. 14, 1969, 44/90147

Int. Cl. A45b *19/00*

U.S. Cl. 135—25 **5 Claims**

A rib assembly for a folding umbrella which comprises a support rib, a receiving rib, an end rib and a connecting rib which are so assembled that they are adapted to form a quadrilateral in the open position of umbrella, said receiving rib being adapted to be held at substantially right angles with a

center rod of the umbrella in said open position, one or more corners of said quadrilateral being made slidable and/or one or more sides of said quadrilateral being made contractile and extensible, thereby enabling the length of at least one side of



the quadrilateral to be varied. Thus, there can be provided a folding umbrella capable of being easily opened with a little force and folded neatly while making an external appearance of the umbrella beautiful or nice at the open position thereof.

3,693,643

COLLAPSIBLE UMBRELLA

Heinz Weber, Hilden, Rhineland, Germany, assignor to Bremshey & Co., Soligen-Ohigs, Germany

Continuation of Ser. No. 768,213, Oct. 11, 1968, which is a continuation of Ser. No. 568,187, July 27, 1966.

Filed Dec. 18, 1969, Ser. No. 882,769

Int. Cl. A45b *19/06*

U.S. Cl. 135—26 **8 Claims**

Collapsible umbrella having telescoping roof-supporting ribs and stick includes a plurality of rods each extending beneath the roofing material of the umbrella in a direction parallel to a roof-supporting rib thereof and having an upper end located adjacent the upper end of the respective rib. The rods extend from the upper ends thereof, in detelescoped condition of the umbrella, a distance substantially equal to half the distance between the normally upper end of the stick and the upper end of a respective lower telescoping rib portion. The rod and the respective rib are separate from and movable relative to one another.

3,693,644

PRESSURE VESSEL FILL AND PRESSURE RELIEF VALVE

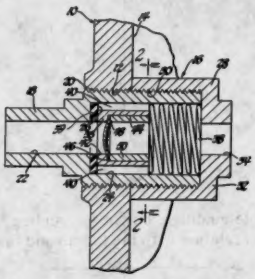
Vincent Dilorenzo, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 20, 1971, Ser. No. 145,157

Int. Cl. F16k *17/16*

U.S. Cl. 137—71 **2 Claims**

A pressure vessel includes a threaded aperture in a wall thereof which threadedly receives the outer threaded surface of a cylindrical housing. The housing includes an inlet cylindrical bore which merges across a radial wall into a like bore of larger diameter. A threaded cylindrical cap is threaded over the housing interiorly of the vessel and includes an apertured radial wall providing an outlet. The radial walls of the housing and cap and the larger diameter bore of the housing define a chamber. A hollow cylindrical valve member is slidably mounted within the chamber and includes a plurality of axial grooves in the periphery thereof. A coil compression spring seats on one end of the valve member and the radial wall of the cap to seat the other end of the valve member against the radial wall of the housing to close the grooves to the inlet. The valve member includes a counterbore and a fluid pressure rupturable diaphragm seats against the radial wall of the counterbore and is retained in place by a press fitted retainer ring to block communication between the inlet and outlet through the valve member and cooperatively define with such member a fluid pressure actuated piston. Communication of the inlet with a source of pressure fluid displaces the piston against the spring to fill the vessel through the axial grooves. Pressure relief is obtained when the diaphragm ruptures under a pressure level in the vessel exceeding a predetermined pressure.



3,693,645

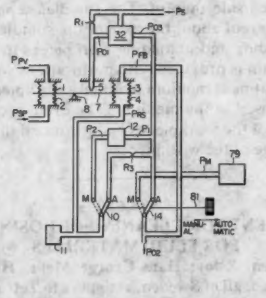
MANUAL-AUTOMATIC CHANGE-OVER DEVICE FOR PNEUMATIC CONTROLLER

Shinichiro Ogawa, Fujisawa, and Ryuhei Fukuda, Yokohama, both of Japan, assignors to Honeywell Inc., Fort Washington, Pa.

Filed June 9, 1971, Ser. No. 151,246

Int. Cl. F15b *3/14*; G05d *16/00*

U.S. Cl. 137—86 **1 Claim**



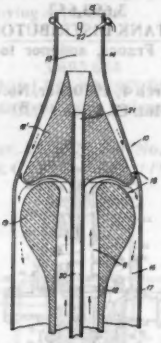
In a manual operation, the output pressure of an inverse proportion pressure converter provided in a second feedback circuit acts against a back pressure detected by a nozzle and a balancing element. This output pressure is applied to a resetting pressure receiving chamber to balance a feedback pressure receiving chamber which receives a manually operating pressure directly.

3,693,646

FLUID PULSING DEVICE

Peter John Baker, 12 Welton Park, Welton, Daventry; Graham John Gale, 103 Home Park, Hurst Green, Oxted, and Barry Edward Adrian Jacobs, 2 Ruffs Furze, Oakley, Bedford, all of England

Filed Jan. 19, 1971, Ser. No. 107,692
Int. Cl. F15c *1/04*
U.S. Cl. 137—81.5 11 Claims



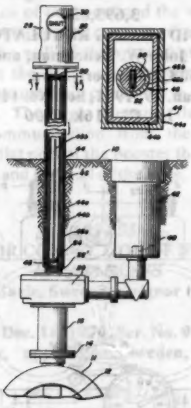
A fluid pulsing device suitable for controlling the output of a chimney to enable the smoke to be discharged as smoke rings comprises an input passageway such as the chimney stack, and output passage such as a vent to atmosphere and a reservoir for smoke. Switching means switches the smoke alternately to the reservoir and to the output passageway, whereupon entrainment empties the reservoir. The switching means may be fluidic, mechanical or means for resonating fluid.

3,693,647

POSITIVELY ORIENTED, ADJUSTABLE LENGTH, BURIED VALVE OPERATOR AND INDICATOR SUPPORT

Robert P. Saar, Downers Grove, Ill., assignor to Henry Pratt Company

Filed July 27, 1970, Ser. No. 58,524
Int. Cl. F16l *5/00*
U.S. Cl. 137—363 3 Claims



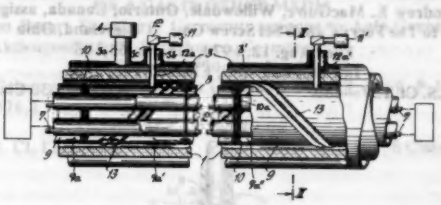
In combination, a self-contained adjustable post for connecting an underground rotary valve to an above ground valve operator, valve position indicator, or the like. An elongated generally hollow housing portion, comprising a pair of relatively non-rotatable telescoped members, extends upwardly from the underground valve to ground level whereby the housing may be telescopically adjusted to accommodate rotary valves buried at variable depths. A connecting shaft portion, comprising a pair of relatively non-rotatable telescoped members, is disposed within the housing, connected at its lower end to the rotary valve shaft to rotate with the valve shaft, and extending at its upper end to ground level within the housing. The upper end of the connecting shaft and the housing are interconnected either directly or by means of the valve operator or valve position indicator whereby the length of the connecting shaft is automatically and simultaneously telescopically adjusted as the length of the housing is telescopically adjusted.

3,693,648

DUCT SYSTEM FOR LOW-TEMPERATURE FLUIDS AND THERMALLY ISOLATED ELECTRICAL CONDUCTORS

Wolfgang Sassin, Julich, Germany, assignor to Kernforschungsoulage Julich Gesellschaft mit beschrankter Haftung, Julich, Germany

Filed May 4, 1970, Ser. No. 34,082
Claims priority, application Germany, May 2, 1969, P 19 22 487.4
Int. Cl. F16l *7/00*
U.S. Cl. 137—375 6 Claims



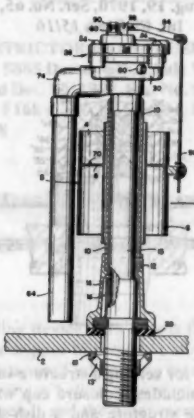
A duct system for low-temperature fluids, especially low-boiling-point gases such as helium, and for thermally isolated electrical conductors wherein an evacuated outer rigid conduit surrounds the fluid-carrying duct which consists of a foil flexible and nonsupporting at room temperature but reinforced by a helical strip. The foil preferably consists of polyethyleneterephthalate.

3,693,649

WATER CONTROL FOR TOILET TANKS

Frederick Armstrong Gordon; James Richard Griffin, and John Joseph Pezzarossi, all of Louisville, Ky., assignors to American Standard Inc., New York, N.Y.

Filed March 31, 1970, Ser. No. 24,247
Int. Cl. F16k *31/18*
U.S. Cl. 137—414 13 Claims



Covers a water control valve for a water tank which is associated with a conventional toilet bowl. The water control

valve includes a valve structure mounted on a vertical water inlet pipe and a float structure which moves vertically along the inlet pipe to control the valve structure. The float structure includes two cup-shaped elements, one positioned vertically above the other, both moving along the inlet pipe in response to any change in the water level within the water tank. The valve structure includes a flexible diaphragm which is normally positioned upon a seat at the upper opening of the inlet pipe and blocks the flow of water into the tank, and a pilot valve to control the movement of the flexible diaphragm. The pilot valve is mechanically coupled to the float structure so that, as the float structure descends toward the bottom of the tank, the pilot valve will be opened and, in turn, allow the diaphragm to be flexed upwardly to allow the entry of water into the tank. When the float structure reaches an upper predetermined position, the pilot valve will be closed and the diaphragm will be returned to its normal position to block the flow of water into the flush tank.

3,693,650

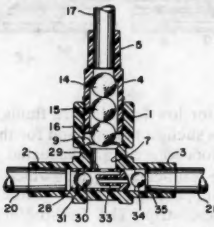
VALVE DEVICE AND ANTI-POLLUTION SYSTEM EMPLOYING THE SAME

Andrew E. MacGuire, Willowdale, Ontario, Canada, assignor to The Ferry Cap & Set Screw Co., Cleveland, Ohio

Filed Aug. 12, 1970, Ser. No. 63,186

Int. Cl. F02d 9/00; F16k 15/04, 15/14

U.S. Cl. 137—480 **30 Claims**



A fluid pressure responsive valve device utilizing a valve member of elastomeric material, particularly adapted for employment in a supplemental air supply system to the manifold of an internal combustion engine.

3,693,651

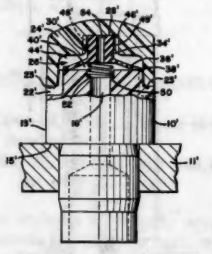
VALVE ASSEMBLY

Robert T. Gifford, Green County, Ohio, assignor to Vernay Laboratories, Inc., Yellow Springs, Ohio

Filed Aug. 19, 1970, Ser. No. 65,129

Int. Cl. F16k 15/16

U.S. Cl. 137—493 **5 Claims**



A valve assembly for venting a structure such as an automobile transmission, includes a closure cap which fits over the vent opening in the structure and a dish-shaped, one-piece resilient valve member which fits over the vent opening and is flexed into sealing engagement by the closure cap. Venting takes place when pressure builds up sufficiently inside the structure to flex the valve member out of sealing engagement and allow excess pressure to escape around the flexed valve member and through an outlet in the cap. In a modification, the central portion of the valve member, which is contacted by the cap, has an opening formed in it which is normally closed by the contact with the cap, but which may be flexed inwardly, uncovering the opening, to provide vacuum relief for the interior of the structure.

3,693,652

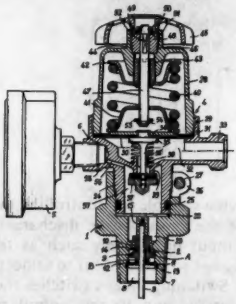
LIQUEFIED GAS TANK DISTRIBUTOR VALVE UNITS

Jacques Iung, Paris, France, assignor to Gurtner S.A., Paris, France

Filed March 4, 1970, Ser. No. 16,387

Int. Cl. F16k 17/30

U.S. Cl. 137—557 **21 Claims**



A distributor unit for liquefied gas tank, which comprises the whole or part of a tank filling gauge, an output limiter, and possibly a service member, a pressure-reducing device comprising a body and a cover enclosing a resilient diaphragm responsive to the expanded gas pressure and to the action of a compensator spring co-acting with a control knob, and a valve member of the pressure-reducing device actuated by said diaphragm, a pressure indicator being also provided, this unit consisting of a vertical grouping, into a single assembly, of said filling gauge, said output limiter and said pressure reducing device or other service member, said pressure indicator being incorporated in this assembly.

3,693,653

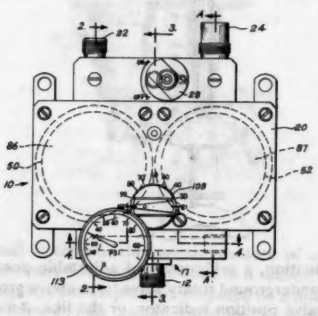
FLUID MIXING REGULATOR

Robert L. Cramer; John W. Henneman, and Jack E. Dunbar, all of P.O. Box 4508, Davenport, Iowa

Filed Jan. 29, 1971, Ser. No. 110,955

Int. Cl. F16k 37/00

U.S. Cl. 137—557 **11 Claims**



A control mechanism for regulating the amount of fluid from a first and second supply source to an outlet. The fluid

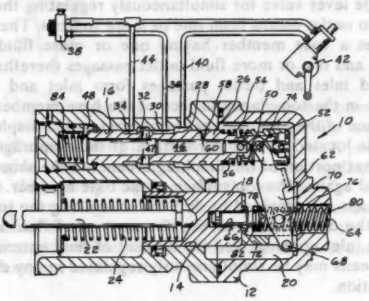
from the first source is transmitted to a first chamber having a valve mechanism controlled by a diaphragm whereas the fluid from the second source is transmitted to a second chamber having an identical valve mechanism controlled by an identical diaphragm. A control mechanism transmits the same fluid pressure to one side of the first diaphragm and to one side of the second diaphragm. Any pressure differential across the respective diaphragm members will operate the valve mechanisms simultaneously to transmit the fluids from the first and second supply sources to a flow chamber from whence the mixture can travel through an outlet in a predetermined ratio to a receiving apparatus.

3,693,654

FRICTIONLESS PRESSURE SEAL

Dean E. Runkle, South Bend, Ind., assignor to The Bendix Corporation

Filed Nov. 23, 1970, Ser. No. 91,694
Int. Cl. F16k *11/07, 11/10*
U.S. Cl. 137—596 **5 Claims**



A hydraulic brake booster is disclosed which includes a housing in which a spool valve is slidably supported to control fluid communication between a fluid pressure source and the booster pressure chamber. A frictionless pressure seal is provided to prevent fluid leakage from the pressure chamber to the outlet port through the interface between the outer circumferential surface of the spool and the wall of the housing. The frictionless pressure seal consists of a passage extending radially through the wall of the spool that communicates an annular groove in the outer circumferential surface of the spool with high pressure fluid contained in a channel provided within the spool. The high pressure fluid in the groove prevents fluid communication from the booster pressure chamber to the outlet port of the booster through the interface between the spool and the wall of the bore.

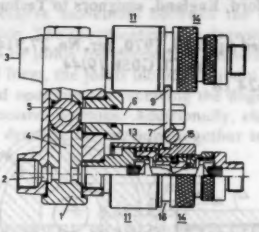
3,693,655

DEVICE FOR CONNECTION OF HYDRAULIC APPARATUSES

Knut Olov Frisk, Gavle, Sweden, assignor to AB Tico, Gavle, Sweden

Filed Dec. 16, 1970, Ser. No. 98,708
Claims priority, application Sweden, Dec. 23, 1969, 17914/69
Int. Cl. F16l *37/28*
U.S. Cl. 137—599.1 **5 Claims**

Hydraulic connecting device with a pressure pipe speed coupling spigot, a return pipe speed coupling spigot, a cut-off valve between the pressure and return pipes, an actuator controlling said valve and a locking device coupled to the actuator which can be brought into mechanical engagement with each speed coupling spigot, the locking device being designed to prevent the cut-off valve to be closed before each of the speed coupling spigots is coupled to its associated speed coupling



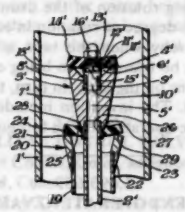
socket and that neither speed coupling spigot can be uncoupled from the associated speed coupling socket before the cut-off valve has opened.

3,693,656

DEVICE FOR ADDING AND DISTRIBUTING A LIQUID OR A GAS IN OTHER MEDIA

Theo Sauer, Starnberg, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 15, 1970, Ser. No. 98,342
Claims priority, application Germany, Dec. 18, 1969, P 19 63 376.2
Int. Cl. F16k *19/00*
U.S. Cl. 137—604 **8 Claims**



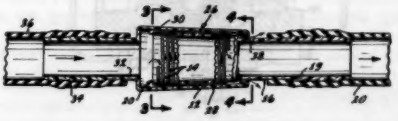
An arrangement for adding and dispersing a liquid or gas into another medium is characterized by a conducting pipe for the other liquid, having coaxially therein a mixing nozzle valve connected to an intake pipe for the one liquid with a substantially radially directed circular slot opening variably in its rotationally symmetric cross-section by the pressure from the one liquid which overcomes the pressure of a resilient disk at the top of the valve.

3,693,657

FLOW RESTRICTOR WITH FLUSHING MEANS

Donald O. Olson, 5885 Dartmouth, Chula Vista, Calif.

Filed Dec. 10, 1970, Ser. No. 96,883
Int. Cl. F16k *47/00*; F15d *1/04*; F17d *1/10*
U.S. Cl. 137—608 **6 Claims**

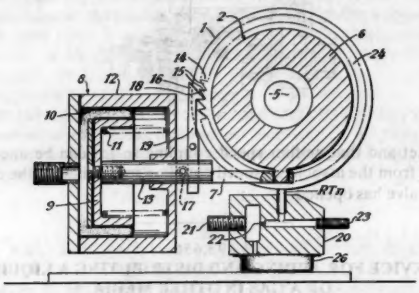


A flow restricting device with means for flushing particularly adapted as a dripper to provide a slow drop flow for use in irrigation. Two tapered telescoping members are provided, the inner one having a helical groove providing a restricted passageway between it and the outer member. By moving the tapered members axially, free flow is provided for between them for flushing.

3,693,658
PNEUMATIC PROGRAM READER

Norman A. de Bruyne, Princeton, N.J., and Geoffrey M. Brewin, Duxford, England, assignors to Techue Systems Incorporated

Filed April 13, 1970, Ser. No. 27,914
Int. Cl. G05b *19/44*
U.S. Cl. 137—624.18 28 Claims

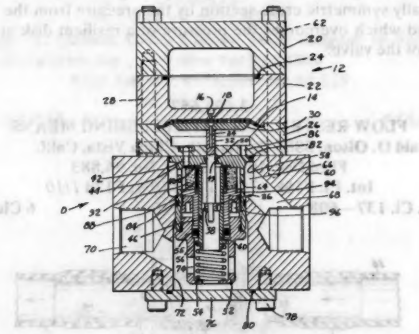


The described invention resides in a pneumatic step-by-step perforated-tape reader comprising a rotatable drum for translating the tape on engagement with the drum, a pneumatic reading head for reading the tape when engaged with the drum, and indexing means for rotating the drum by indexed movements; the indexing means comprising escapement means for controlling rotation of the drum so that the drum undergoes the same degree of rotation in each indexed movement thereof, whereby when the tape is engaged with the drum, the tape can be translated to bring each of the succession of data locations on the tape, in turn, to the reading head to be read thereby. The invention includes mechanical features involved in the operation of the foregoing combination.

3,693,659
SILENT OPERATING VALVE

Gary D. Parola, Lafayette, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed Feb. 8, 1971, Ser. No. 113,370
Int. Cl. F16k *3/32, 47/14*
U.S. Cl. 137—625.3 5 Claims

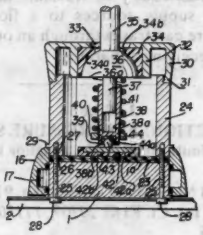


A silent valve with an axially operated valve closure plug, operating against axial inlet flow. An outlet passage is disposed radially outward of the closure plug, and intermediate it and the closure plug is an annular member of porous material. The plug is guided in a sleeve disposed intermediate it and the annular member. A plurality of through openings around and along the guide sleeve are covered progressively as the closure plug moves toward open position.

3,693,660
SINGLE LEVER VALVE

Lee V. Wheelock, 1385 Norris Dr., Franklin County, Ohio

Filed Sept. 9, 1970, Ser. No. 70,712
Int. Cl. F16k *11/00*
U.S. Cl. 137—625.4 15 Claims

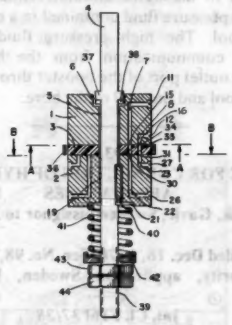


A single lever valve for simultaneously regulating the flow of fluid to outlet means from one or more sources. The valve comprises a base member having one or more fluid inlet passages and one or more fluid outlet passages therethrough. The fluid inlet and outlet passages form inlet and outlet openings in the top planar surface of the base member. The top surface of the base member is covered with a diaphragm. A shoe is located on the top surface of the diaphragm and causes that portion of the diaphragm beneath the shoe to be depressed against the top surface of the base member. Single lever means are provided to shift the shoe along the top surface of the diaphragm whereby the amount of fluid issuing from the inlet openings and the amount of fluid entering the outlet means may be simultaneously regulated in any desired combination.

3,693,661
MULTIPLE FLOWPATH ROTARY VALVE

Jacques Aurenge, 74, Avenue du Fort St. Irenee, 69 Lyon 5eme, and Jean Desfeuillet, Route du Pont, 69 Jons, both of France

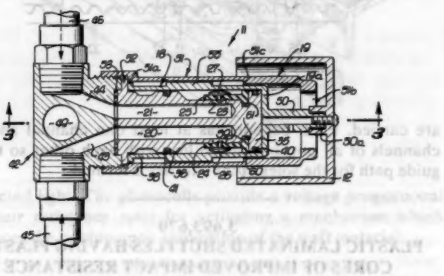
Filed Aug. 7, 1970, Ser. No. 62,080
Claims priority, application France, Aug. 12, 1969, 6927636
Int. Cl. F16k *5/14, 11/00*
U.S. Cl. 137—625.18 5 Claims



A multi-way valve capable of use at high pressures including a pair of coaxial cylindrical facing bodies, one rotatable and the other stationary, having passageways therethrough, a seal therebetween, an axle and a spring urging the bodies together.

3,693,662
Patent Not Issued For This Number

3,693,663
MIXING VALVE
Julius L. Tolnai, Los Angeles, and Patsy B. Palmer, Granada Hills, both of Calif., assignors to Price-Pfister Brass Mfg., Co., Pacoima, Calif.
Filed Nov. 27, 1970, Ser. No. 93,225
Int. Cl. F16k *11/14, 19/00*
U.S. Cl. 137—636.1 **12 Claims**

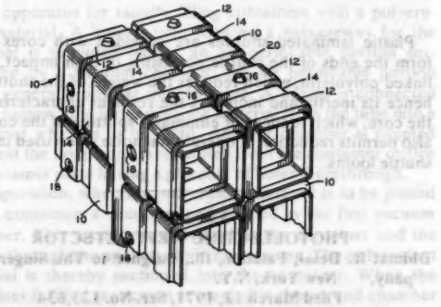


A mixing valve having a valve post wherein a pair of fluid supply channels terminate at respective laterally facing orifices. A flexible sealing flap overlies each orifice. A post encircling valve sleeve includes an interior cam surface which presses the sealing flaps against the orifices for selective blocking or opening thereof depending on the axial and angular position of the sleeve. Fluid emergent from the orifices flows through a mixing chamber between the post and sleeve to a return port in the post.

ERRATUM

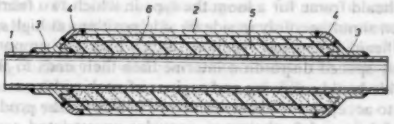
For Class 137—57 see:
Patent No. 3,693,666

3,693,664
MODULAR CELLULAR CONDUIT ASSEMBLY
John D. Schmunk, Findlay, Ohio, assignor to The Hancock Brick & Tile Company
Filed Oct. 15, 1970, Ser. No. 81,027
Int. Cl. F16l *9/18, 39/00*
U.S. Cl. 138—111 **8 Claims**



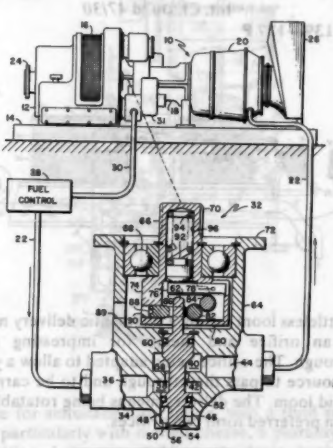
A modular assembly for constructing conduits of the type used for underground telephone lines, electrical lines, and the like. The specification discloses several embodiments each of which generally comprises a plurality of side-by-side corrugated plastic tubing sections. These sections are provided with laterally extending means which engage to prevent relative longitudinal movement between adjacent sections. Preferably, longitudinally spaced and circumferentially extending wrapping or binding members encircle the assembled section to prevent relative movement between the sections in the lateral direction. The specification and drawings also disclose several forms of joints for connecting aligned assemblies. In the preferred form, the joints include resilient foam members having spaced openings for receiving the aligned ends of the tubes in successive sections. Additionally, clamp means are provided for drawing the sections together to compress the foam members.

3,693,665
PIPELINE FOR THE TRANSPORT OF COLD LIQUIDS
Coenraad W. N. Veerling, Amsterdam, and Victor A. Grossen, Hague, both of Netherlands, assignors to Shell Oil Company, New York, N.Y.
Filed Jan. 4, 1971, Ser. No. 103,556
Int. Cl. F16l *9/14*
U.S. Cl. 138—149 **16 Claims**



Pipeline for cold liquids made of coaxial pipes and insulation therebetween, one of the pipes being under axial compression and the other being under axial tension, buckling being prevented by the elastic support of the insulation between the pipes.

3,693,666
FLOW CONTROL VALVE
Paul A. Avery, Fort Collins, Colo., assignor to Avco Corporation, Stratford, Conn.
Filed May 3, 1971, Ser. No. 139,580
Int. Cl. G05d *13/04*
U.S. Cl. 137—57 **10 Claims**



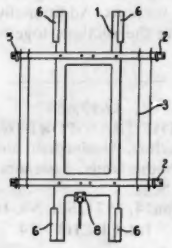
The disclosure illustrates an overspeed cutoff valve for a gas turbine engine. The valve has a rotatable base incorporating a Rolamite device in which a pair of rotatable elements and an S-shaped band are biased toward the axis of rotation of the base. At a predetermined R.P.M. the rotatable elements displace outwardly so that one of the walls which guides the rotatable elements may pivot and displace a valve element to a cutoff position.

3,693,667

HEALD FRAME

William Charles Arnold, 4 Mill Hill Drive, Winshill, Burton-on-Trent, Staffordshire, England

Filed Sept. 23, 1970, Ser. No. 74,745
Int. Cl. D03c 9/06, 13/00
U.S. Cl. 139—91 3 Claims



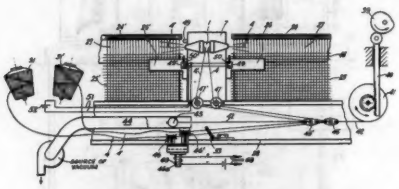
A heald frame for a loom the type in which two fabrics are woven simultaneously in side by side positions at high speeds. The heald frame has receiving bars which are supported in widely spaced disposition intermediate their ends to thereby provide heald receiving end regions of such width so as to be able to accept a sufficient number of healds for the production of a fabric and furthermore, provides unrestricted access to the heald receiving portions of the heald receiving bars. The heald receiving bars are secured to a support frame in the central region of the bars and thereby the bars have ends which project in cantilever manner from the frame.

3,693,668

PNEUMATIC WEFT DELIVERY MEANS FOR SHUTTLELESS LOOMS

Vladimir Svaty, Liberec, Czechoslovakia, assignor to Elitex, Zavody textilniho strojirenstvi, generalni reditelstvi, Liberec, Czechoslovakia

Filed Oct. 8, 1970, Ser. No. 79,035
Claims priority, application Czechoslovakia, Oct. 8, 1969, 6716-69
Int. Cl. D03d 47/30
U.S. Cl. 139—127 P 13 Claims



A shuttleless loom having a pneumatic delivery means comprising an orifice and means for impressing an air jet therethrough. The orifice being adapted to allow a yarn from a supply source to pass therethrough and to be carried by said jet to said loom. The delivery means being rotatably mounted having in preferred form two orifices.

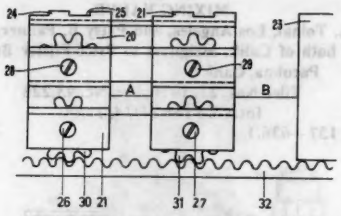
3,693,669

RIBBON WEAVING MACHINE

Hubertus N. C. Evers, Nieuwendijk, Heeze, Netherlands

Filed April 16, 1970, Ser. No. 29,014
Int. Cl. D03d 35/00
U.S. Cl. 139—136 5 Claims

A batten for a ribbon weaving machine having a plurality of clamps for holding yarn bobbins. Each clamp is formed of at least two identical laterally disposed portions, each portion having a single set of gear wheels to cooperate with one or more toothed racks in shuttles upon which the yarn bobbins



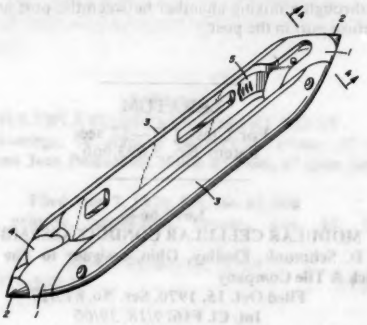
are carried. Each portion has at least one channel and the channels of all portions are in line with each other so that a guide path for the soles of the shuttles is formed.

3,693,670

PLASTIC LAMINATED SHUTTLES HAVING PLASTIC CORES OF IMPROVED IMPACT RESISTANCE

Kenneth Donald Meyres, Cincinnati, Ohio, assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Feb. 9, 1971, Ser. No. 113,921
Int. Cl. D03j 5/02
U.S. Cl. 139—196 4 Claims



Plastic laminated shuttles are provided with cores which form the ends of the shuttle consisting of high impact, cross-linked polyolefin, which reduces the weight of the shuttle and hence its inertia and increases the resilient characteristics of the core, which reduces or eliminates splitting of the core and also permits reduction in operational noise when used in flying shuttle looms.

3,693,671

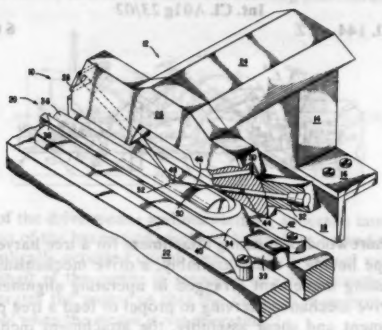
PHOTOELECTRIC WEFT DETECTOR

Dhimat R. Desai, Palatine, Ill., assignor to The Singer Company, New York, N.Y.

Filed March 12, 1971, Ser. No. 123,634
Int. Cl. D03d 45/12
U.S. Cl. 139—273 A 8 Claims

A photoelectric weft detector for fly-shuttle weaving looms utilizing photoelectric sensing means comprises a first photocell positioned to sense specular and diffuse reflected light from a specified surface area of a bobbin, and a second

photocell positioned at approximately the same distance from the specified area of the bobbin to receive only diffuse



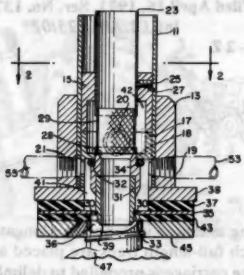
reflected light. The photocells provide a voltage proportional to their resistance ratio for activating a mechanism which replaces the bobbin upon exhaustion of the weft material.

3,693,672

CONTAINER FILLING SYSTEM

Lewis R. Hiland, Peekskill, N.Y., assignor to Avon Products, Inc.

Filed Dec. 16, 1970, Ser. No. 98,736
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—7 11 Claims



An apparatus for rapidly filling containers with a pulverulent material. A hollow tube forming a passageway for the material is provided having an air permeable portion surrounded by a vacuum chamber; the air permeable portion being generally powder impermeable. A nozzle is connected to the hollow tube for passing the material from the tube into a container which is to be filled. Another chamber is situated adjacent the nozzle and is separated from the container orifice by a retainer plate having a plurality of holes therethrough.

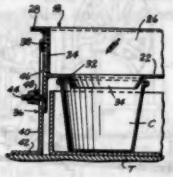
In operation, when the pulverulent material is to be passed into a container, a vacuum is established in the first vacuum chamber. This vacuum is conveyed to the container and the nozzle through the apertured nozzle retainer. The pulverulent material is thereby suctioned into the container. When the container is filled, a vacuum is created in the second chamber which vacuum is transferred through the air permeable portion of the tube into the hollow passageway. The pulverulent material is thereby inhibited from passing through the tube. At the same time, a blast of air is forced into the first chamber thereby packing the material in the container and clearing the material from the second chamber and the apertured retainer.

3,693,673

DELIVERY OF FLOWABLE MATERIALS INTO CONTAINERS

John E. Oates, 6329 Alamo Avenue, Clayton, Mo.

Filed Dec. 18, 1970, Ser. No. 99,545
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—237 3 Claims



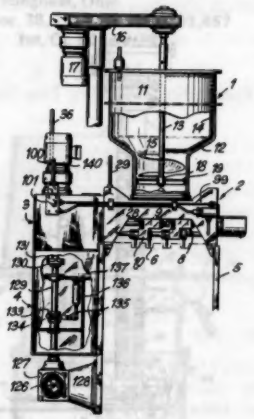
Means for quickly delivering predetermined quantities of semiliquid or flowable materials into a large number of similar containers. Particularly advantageous for use in schools, hospitals, cafeterias and the like, especially when numerous meals are to be served in a short time. May be employed in the packing industry as well. Serves to obviate the tedious and time-consuming manual operations of filling conventional paper cups and similar containers one at a time.

3,693,674

DEVICE FOR DISPENSING A FLUID SUBSTANCE, AND MORE PARTICULARLY MELTED CHEESE

Marcel, Aime, Rene Guyonnet, Chaville, France, assignor to Fromageries Bel-La Vache Quit Rit, Paris, France

Filed Dec. 2, 1970, Ser. No. 94,300
Claims priority, application France, Dec. 4, 1969, 6941905
Int. Cl. B65b *3/32*
U.S. Cl. 141—242 3 Claims



A device for simultaneously filling, with a fluid substance and more particularly with melted cheese, a plurality of containers positioned along parallel lines, the device having a tank the bottom of which is provided with orifices the number of which being equal to the number of containers to be filled. Beneath each orifice is disposed dosing means.

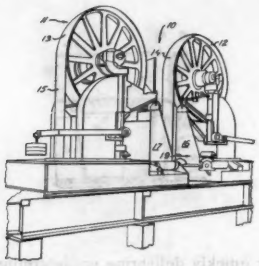
The orifices and the dosing means are positioned at the corners of regular polygons having their centers lying on the axis of the tank. Discharge conduits are provided at the outlets of the dosing means and are so directed as to convey the substance above the various parallel lines.

3,693,675

SHEAR BLADE

Francis E. Allen, 956 Beaumont Drive, North Vancouver, British Columbia, Canada

Filed July 7, 1970, Ser. No. 52,943
Int. Cl. B27b *15/08*
U.S. Cl. 143—22 9 Claims



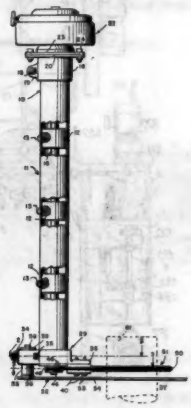
Shear blade for use in band mills used in lumber processing, the shear blade adapted to restrict propellering of lumber. Leading edge of shear blade is tight, being at higher stress than remaining portions of blade, tightness attained by using one or more of three approaches. First approach is to apply asymmetrical load to the blade, load being applied forward of center line of blade. Second approach is to make trailing edge longer than leading edge, and third approach is to roll-tension shear blade.

3,693,676

UNDERWATER PILE CUTTING SAW

Edward N. Burch, 6261 Swartout Road, Algonac, Mich.

Filed Dec. 16, 1970, Ser. No. 98,663
Int. Cl. B27b *17/08*
U.S. Cl. 143—32 R 5 Claims



A power saw capable of being manually manipulated above the surface of a body of water for cutting off pilings and the like adjacent the bottom. A locator member which engages around the piling or object to be cut includes a post about which the saw swings, across the locator member, for cutting off the piling or object.

3,693,677

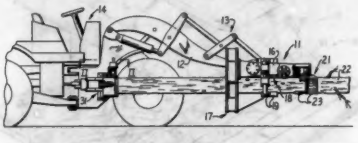
Patent Not Issued For This Number

3,693,678

SHORT WOOD ATTACHMENT FOR TREE HARVESTERS

Raymond L. Moser, Tremont, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 28, 1970, Ser. No. 101,559
Int. Cl. A01g *23/02*
U.S. Cl. 144—2 Z 6 Claims



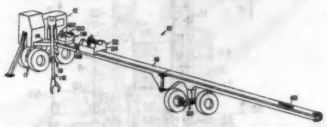
A short wood or bucking attachment for a tree harvester of the type having a shear assembly, a drive mechanism and a processing implement arranged in operating alignment with the drive mechanism serving to propel or feed a tree past the implement and shear assembly, the attachment including a positive stop for accurately positioning the tree relative to the shear assembly, a sensing mechanism arranged between the stop and the shear assembly and a control unit for deactuating the drive mechanism and operating the shear assembly in response to engagement of the tree with the sensing mechanism, spacing between the sensing mechanism and stop permitting momentum of the tree to carry it into engagement with the stop after deactuation of the drive mechanism and before substantial cutting engagement of the shear assembly with the tree.

3,693,679

DELIMBING AND TOPPING BLADE CONTROL LINKAGE

Victor Charles Pierrot, III, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed April 16, 1971, Ser. No. 137,155
Int. Cl. A01g *23/02*
U.S. Cl. 144—2 Z 5 Claims



A delimbing machine includes an elongate horizontal platform on which full-length trees are placed and along which a blade-carrying carriage is propelled to delimb and then cut the top from a tree stem. The delimbing blades are spring-biased into encirclement of a tree stem and cams mounted on the opposite ends of the platform operate a crank to cause the blades to open to permit a tree to be delimbed to be placed for encirclement by the blades and to permit a delimbed tree to be removed from the blades. The topping blades are also spring-biased toward engagement with the tree stem but are held away from the tree stem by an overcenter linkage which is moved overcenter by a linkage connected to the crank arm for opening the delimbing blades when the delimbing blades reach a predetermined small diameter near the top of the tree stem.

3,693,680

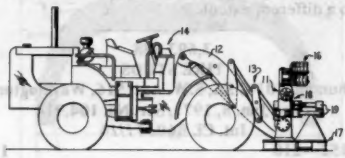
TREE HARVESTER DRIVE ARRANGEMENT

Raymond L. Moser, Tremont, Ill., and Max J. Teasdale, Waterloo, Belgium, assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 7, 1971, Ser. No. 150,525
Int. Cl. A01g *23/02*
U.S. Cl. 144—3 D 16 Claims

A tree harvesting machine including a processing implement, clamping and drive mechanisms for respectively secur-

ing a tree in proper alignment and propelling the tree past the processing implement, a rotary motor for operating the drive means and a speed reducing assembly for coupling the motor with the drive means, a flywheel being arranged for rotation with the motor to assist the motor in meeting peak torque de-



mands of the drive means and maintaining generally constant operation of the harvesting machine. In another embodiment, a hydraulically actuated clutch engages the flywheel with an output shaft of the motor in response to a fluid supply with also operates the motor so that the flywheel is permitted to freewheel when the motor is not operating.

3,693,681

Patent Not Issued For This Number

3,693,682

ROTARY CUTTING MACHINE WITH ADJUSTABLE CUTTER

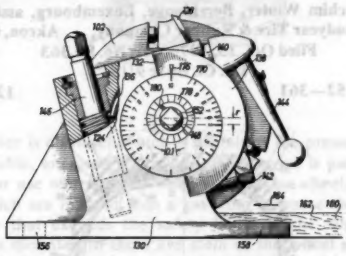
Morten Birger Hasfjord, Odeshog, Sweden, assignor to Svenska Industrietablering Saktiebolaget, Stockholm, Sweden

Filed Aug. 21, 1970, Ser. No. 66,037

Claims priority, application Sweden, Aug. 21, 1969, 11591/69

Int. Cl. B27c *1/00*

U.S. Cl. 144—130 **7 Claims**



The disclosure relates to an adjustable rotary cutting head for use in jointers, planers, and other similar machines with rotary cutting heads. The rotary cutting head is mounted for rotation in a fixed shaft. The cutting head is adjusted vertically by means of an eccentric portion which raises and lowers the shaft as the eccentric member is rotated. The shaft is adjusted laterally by means of a threaded bore and adjustment screw which moves the shaft axially as the adjustment screw is rotated. Means are provided for indexing the relative rotation of the eccentric member.

3,693,683

METHOD AND APPARATUS FOR WORKING ELONGATE COMPONENTS AT SUCCESSIVE LONGITUDINAL LOCATIONS

James Hurn, Fresford, England, assignor to Hurn Brothers Engineering Limited, Melksham, Wiltshire, England

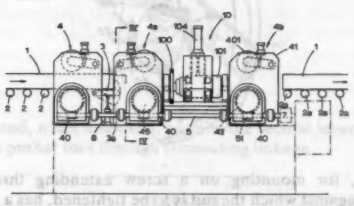
Filed April 17, 1970, Ser. No. 29,568

Claims priority, application Great Britain, April 17, 1969, 19,636/69

Int. Cl. B27m *3/00*

U.S. Cl. 144—325 **7 Claims**

The invention is concerned with a method of and apparatus for performing a succession of working operations at preselected locations along the length of an elongate workpiece. The leading end of the workpiece is advanced up to a datum position. On the upstream side of the datum position there is located a drive roller, and on the downstream side of the datum position there is located a working station. The work station has at a predetermined distance from the datum position, at least one working tool, for example a saw or a drill. The workpiece is held against the drive roller, and then said drive roller is rotated through a succession of rotary movements, with the drive roller being stationary between move-



ments for predetermined time intervals. During each movement the drive roller is rotated through a predetermined amount. The workpiece is thereby advanced in successive steps through said work station and successive preselected locations longitudinally of the workpiece are brought opposite the working tool, and held stationary for predetermined time intervals between the periods of movement. A second drive roller is located on the downstream side of the work station which is driven in synchronism with the upstream drive roller. Working operations are only performed when the workpiece is stationary.

3,693,684

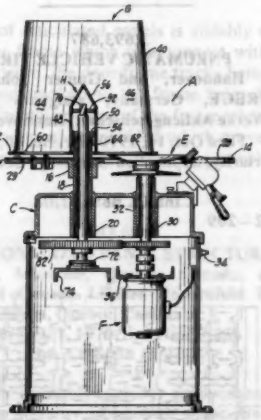
CUTTING APPARATUS

Louis A. Bettcher, Amherst, Ohio, assignor to Bettcher Industries, Inc., Birmingham, Ohio

Filed Dec. 28, 1970, Ser. No. 101,457

Int. Cl. B26d *4/28*

U.S. Cl. 146—105 **7 Claims**



Apparatus for severing a comestible product, such as, meat, vegetables, and the like, having a multiple compartment product carrier rotatable about a generally vertical axis for moving a product or products to be severed past a rotating knife and which can be loaded without interrupting its rotation.

3,693,685

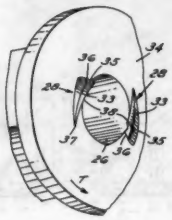
FASTENER

George R. Onufer, Tulsa, Okla., assignor to Russell, Burdsall & Ward Bolt and Nut Co., Port Chester, N.Y.

Continuation-in-part of Ser. No. 806,119, March 11, 1969, Pat. No. 3,638,700. This application May 14, 1971, Ser. No. 143,354

Int. Cl. F16b *39/282, 39/30*

U.S. Cl. 151—21 C 3 Claims



A nut, for mounting on a screw extending through a member against which the nut is to be tightened, has a plurality of spiral ramps on the face adapted to abut the member during nut tightening, with the ramps arranged adjacent the nut bore and having the high ends which first engage the member being disposed radially closer to the bore axis than the lower opposite ends with the slope of the ramp between such ends being opposite to the helix slope of the thread of the screw whereby the member is ironed radially inwardly by the ramps during nut tightening to force portions of the member into the threads of the screw increasing the locking action between the screw, the nut and such member. In a modification of the nut the ramps may be either concentric or spiral, but have end faces opposing unthreading of the nut. The ramps may have a screw thread form on their radially inwardly facing edges to provide a lead screw action in starting a screw member through an unthreaded bore of the nut. Also disclosed is an application of the ramp concept to a bolt head and to a lock washer. Methods of making the nut are also shown.

3,693,686

Patent Not Issued For This Number

3,693,687

PNEUMATIC VEHICLE TIRE

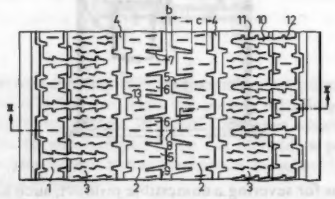
Kurt May Hannover, and Gunter Johannes, both of Neustadt/RBGE, Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany

Filed Oct. 14, 1970, Ser. No. 80,577

Claims priority, application Germany, Oct. 25, 1969, G 69 41 584.5

Int. Cl. B60c *11/08*

U.S. Cl. 152—209 10 Claims



A pneumatic vehicle tire with a profiled tread strip in which at least two circumferential ribs are provided with a circumferential groove therebetween while said ribs located on opposite sides of said grooves are respectively provided with protrusions extending from opposite sides into said circumferential groove, each protrusion on one side of one and the same groove being located oppositely one protrusion on the other side of said groove while one of each two protrusions which are located opposite to each other extend into the groove to a different extent.

3,693,688

TIRE STUDS

Mark Schuman, 101 G St., S.W. Apt. 516, Washington, D.C.

Filed Jan. 8, 1971, Ser. No. 104,914

Int. Cl. B60c *11/16*

U.S. Cl. 152—210 11 Claims

A studded tire having blind holes in its tread into which headed studs are fitted, with a space provided between the inner end of each stud head and the bottom of its blind hole, and passageways communicating said space to the exterior of the tread for passage of fluid from the road to the space for forming a less compressible backing for the studs when they contact a wet road surface.

3,693,689

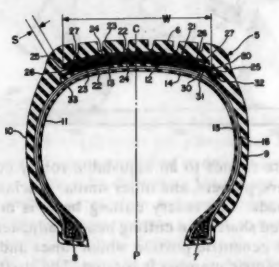
PNEUMATIC TIRE

Hans Joachim Winter, Bereldange, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 13, 1970, Ser. No. 80,363

Int. Cl. B61c *9/18*

U.S. Cl. 152—361 12 Claims



A radial tire with a pair of folded breaker strips for annularly reinforcing the tire. An unfolded breaker strip, laterally spanning the folded breaker strips, is positioned between the carcass plies and nearest folded breaker. The unfolded breaker includes reinforcing cords having an angular disposition between the angles of the cords reinforcing the carcass plies and folded breakers.

3,693,690

PNEUMATIC AIRCRAFT TIRE

Harold E. Mills, Wadsworth, Ohio, and Claude S. Young, Danville, Va., assignors to The Goodyear Tire and Rubber Company, Akron, Ohio

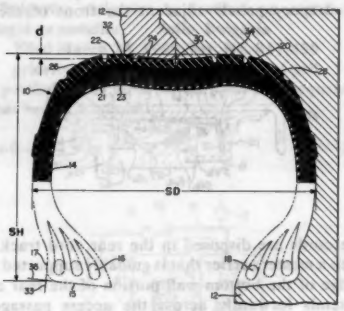
Filed June 29, 1970, Ser. No. 50,643

Int. Cl. B60c *3/00*

U.S. Cl. 152—352 5 Claims

A bias belted pneumatic aircraft tire having belts of nylon cord fabric and a molded cross-sectional tread configuration

wherein the center portion of the tread is depressed with respect to a pair of portions of the tread on laterally opposite sides thereof.

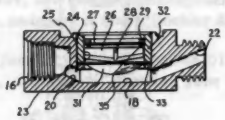


3,693,691

PRESSURE RELIEF DEVICE

Stanley E. Summers, Woodland Hills, Calif., assignor to Ametek, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 54,397, July 13, 1970, abandoned. This application Nov. 23, 1970, Ser. No. 91,845
Int. Cl. F16k *17/16*; B60c *29/00*
U.S. Cl. 152—427 10 Claims



A device is disclosed which is useful for the pressure relief of inflatable, enclosed recepticles. The device is particularly suited for use with aircraft wheels or similar wheels bearing tires which are inflated with a gas from a source that is at a pressure that exceeds the safety limits of the wheel. The device is mounted in the valve stem of the wheel and comprises a body, a flow passageway therethrough and in communication with at least one inlet and two outlet ports with one of the outlet ports sealed by a rupturable diaphragm and the other outlet port communicating with the tire chamber. The flow pressure drop through the device and the valve stem insure that the diaphragm is exposed to a pressure greater than that existing in the tire chamber during its inflation. By appropriate design, the pressure supply will rupture the diaphragm before any excessive pressure rise occurs within the tire. The use of rupturable diaphragms for this purpose provides a tamper proof relief system with a positive seal.

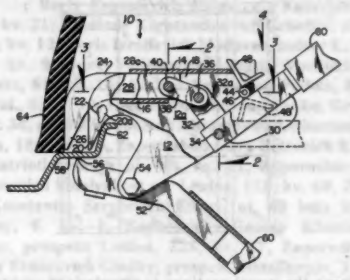
3,693,692

TIRE BEAD BREAKING TOOL

Charles Earl Branick, 1601 S. 9th St., Fargo, N. Dak.

Filed Dec. 23, 1970, Ser. No. 100,913
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.17 10 Claims

Portable tire bead breaking tool characterized by a body member having a pair of fixed spaced wedges and a movable pusher foot of like shape disposed therebetween; a pivoted lever for initially forcing the fixed wedges radially inward between a tire bead and a wheel rim flange; and a second pivoted lever for thence moving the pusher foot laterally relative to the fixed wedges for further forcing the bead away from the flange to a released position. A releasable device locks the second lever to the body member during the initial wedging action and, when unlocked, permits the second lever to translate the pusher foot through connecting linkage.

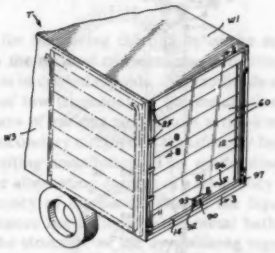


3,693,693

VERTICALLY SLIDING DOOR MOUNTED IN HORIZONTALLY PIVOTED FRAME

Charles T. Court, P.O. Box 1921, Texarkana, Tex. 75501

Filed Dec. 11, 1970, Ser. No. 97,211
Int. Cl. E05d *15/22*
U.S. Cl. 160—195 3 Claims



An assembly of articulated panels is slidably mounted in tracks on a door frame which interconnect with overhead tracks in an enclosure, the door frame tracks being separable from the overhead tracks and the frame being hinged in a doorway for horizontal opening of the frame when the panels are closed. Latch means is provided which prevent opening movement of the frame except when the panels are completely closed.

3,693,694

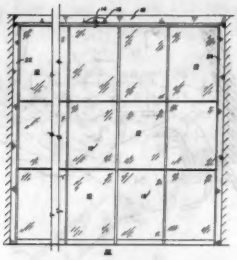
SECTIONALIZED PANEL STRUCTURE

Karl C. Elhen, Montreal, Quebec, Canada, assignor to Modernfold of Canada Limited-Modernfold Du Canada Limitee, St. Lambert, Quebec, Canada

Filed Oct. 1, 1970, Ser. No. 77,256
Int. Cl. E05d *15/26*
U.S. Cl. 160—199 8 Claims

A space divider assembly includes an overhead track arrangement and a plurality of built-up space divider panels suspended therefrom by means permitting movement of said panels along the track arrangement. Each of the built-up space divider panels includes a plurality of panel sections secured together and disposed end-to-end in co-planar vertically stacked relation to provide the required overall panel height. Each panel section defines pairs of spaced marginal edges, with adjacent spaced pairs of marginal edges of the respective end-to-end co-planar panel sections confronting

each other. An elongated alignment strip is disposed between each adjacent confronting pair of marginal edges to assist in



maintaining the panel sections in the desired co-planar relationship.

3,693,695

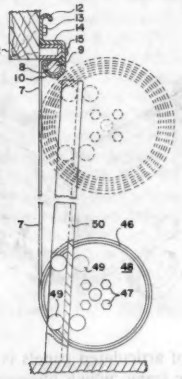
CLOSURE CONSTRUCTION

Chester A. Deane, 3149 Allentown Road, Lima, Ohio

Continuation-in-part of Ser. No. 753,463, Aug. 19, 1968. This application July 31, 1970, Ser. No. 60,069

Int. Cl. E06b 9/10

U.S. Cl. 160—243 **7 Claims**



A closure for a vertical doorway comprises a sheet of flexible material secured at the top of the doorway in the plane of the latter and fixed at its lower edge to a roller within which is mounted a driving motor for rotating the roller to wind and unwind the flexible sheet about the roller. The roller is guided in its winding and unwinding movements by rails which are inclined to the vertical in such manner as to assure that those portions of the sheet that are unwound from the roller remain at all times flush with the plane of the doorway.

3,693,696

TRAVERSE ASSEMBLY FOR DRAPERIES AND THE LIKE

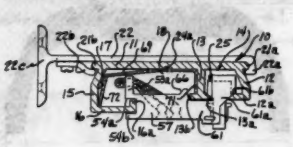
Ferdinand F. Salzmann, Madison, Wis., assignor to Consolidated Foods Corporation, Chicago, Ill.

Filed Aug. 30, 1971, Ser. No. 176,161

Int. Cl. A47h 5/032

U.S. Cl. 160—345 **10 Claims**

A traverse assembly for draperies and the like including an elongated rigid rod having a top wall and front and intermediate walls extending downwardly from the top wall defining a downwardly opening front carrier track, and a rear wall extending downwardly from the front wall and having a bottom wall portion at its lower edge defining a forwardly opening rear cord track spaced rearwardly from the front carrier track to provide a downwardly opening access passage therebetween. Headed drapery carriers are supported in the front carrier track and extend downwardly below the track to support drapery panels adjacent the front of the rod and



traverse cords are disposed in the rear cord track and connected to a master carrier that is guidably supported at the forward edge of the bottom wall portion of the rear cord track and extends forwardly across the access passageway and below the intermediate wall of the front carrier track.

3,693,697

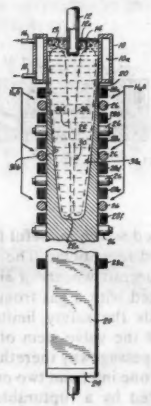
CONTROLLED SOLIDIFICATION OF CASE STRUCTURES BY CONTROLLED CIRCULATING FLOW OF MOLTEN METAL IN THE SOLIDIFYING INGOT

Alexander A. Tzavaras, Broadview Heights, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

Filed Aug. 20, 1970, Ser. No. 65,611

Int. Cl. B22d 27/02, 11/12

U.S. Cl. 164—51 **15 Claims**



Continuously casting an ingot wherein the ingot has a pool of molten metal extending downstream a substantial distance from the casting mold, entrained by an outer skin of the ingot formed during passage through the mold. The molten metal within the pool is continuously circulated along the solid/liquid interface advantageously for at least a major portion thereof in a first direction the same as that of ingot movement and is returned in an opposite direction within the interior of the pool. This sweeping flow of metal along the interface changes the solidification microstructure from that which would be normally present, and results in the formation of improved and advantageously new products, e.g., new steel bodies, particularly noted by unique microstructures. The flow rate is chosen to provide a variety of novel solidification structures, i.e., modified equiaxed dendritic structure, or structures herein described as thamnitic of fibrous structures, within the ingot. The circulation of the molten metal may be provided by a helical coil which extends about the ingot downstream from the mold and, in the optimum arrangement, for substantially the entire extent of the molten pool within the ingot.

3,693,698

METHOD OF CASTING VOLATILE METALS

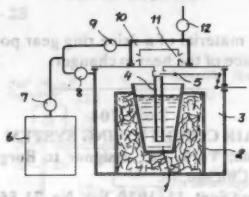
Angel Tontchev Balevski, and Ivan Dimov Nikolov, both of Sofia, Bulgaria, assignors to Institut po metaloznanie i technologia na metalite, Sofia, Bulgaria

Filed March 28, 1969, Ser. No. 811,450

Claims priority, application Bulgaria, April 5, 1968, 9749The portion of the term of this patent subsequent to Oct. 6, 1987, has been disclaimed.

Int. Cl. B22d 27/14

U.S. Cl. 164—119 2 Claims



A method of casting of metals wherein the metal is heated under a pressure sufficient to prevent evaporation or disassociation, is transferred to a mold while the pressure is maintained and is finally cooled under the aforementioned pressure. Thereafter, the pressure is reduced to allow removal of the cast article.

3,693,699

ARRANGEMENT FOR ELECTROSLAG REMELTING OF METALS AND, IN PARTICULAR, STEEL

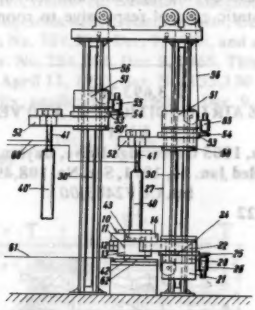
Wolfgang Holzgruber, and Otmar Kleinhagauer, both of Kapfenberg, Austria, assignors to Gebr. Boehler & Co., Kapfenberg, Austria

Filed June 15, 1970, Ser. No. 46,014

Claims priority, application Austria, June 17, 1969, A 5711/69

Int. Cl. B22d 27/02

U.S. Cl. 164—250 7 Claims



An installation for electroslag remelting of metals and, in particular, steel. Two vertical columns are provided on each of which there is vertically slidably mounted electrode-holding means. One of the two columns also vertically slidably supports a mold-holding means adapted to support a mold for receiving the molten metal. Each one of the electrode-holding means is horizontally swingably mounted about the longitudinal axis of its associated column so that each electrode-holding means is adapted to describe a predetermined arcuate path which intersects the arcuate path described by the other electrode-holding means. The mold-holding means is also horizontally swingable and adapted to position the mold during the remelting process so that its longitudinal axis substantially coincides with the point of intersection of the arcuate paths of the electrode-holding means.

3,693,700

INSTALLATION FOR THE ELECTROSLAG REMELTING OF CONSUMABLE ELECTRODES WITH MODULATED CURRENT

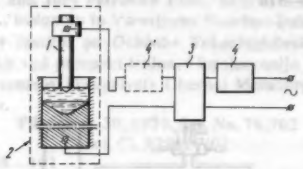
; Boris Evgenievich Paton, ul. Katasjubinskogo, 11/13, kv. 21; Vladimir Konstantinovich Lebedev, ul. Engelsa, 25, kv. 12; Boris Izrailevich Medovar, bulver L. Ukrainki, 2, kv. 8; Jury Vadimovich Latash, Vozdukhoflatsky Prospekt, 81, kv. 14; Nikolai Vasilievich Podola, Pushkinskaya ul., 8, kv. 12; Oleg Petrovich Bondarenko, Kreschatik 15, kv. 34, all of Kiev; Semen Abramovich Leibenzon, prosp. Lenina, 185, kv. 36, Zaporozhie; Gary Petrovich Kaganovsky, patrioticheskaya ul., 48, kv. 71, Zaporozhie; Vadim Filimonovich Smolyakov, pr. Lenina, 155, kv. 60, Zaporozhie; Konstantin Sergeevich Eltsov, ul. 40 letia Sovetskoi Ukrainy, 6, kv. 1, Zaporozhie; Georgy Kharitonovich Gabuer, prospekt Lenina, 228, kv. 17, Zaporozhie, and Dmitry Fedorovich Gladky, prospekt Metallurgov, 3, kv. 33, Zaporozhie, all of U.S.S.R.

Continuation of Ser. No. 641,605, May 26, 1967, abandoned.

This application July 6, 1970, Ser. No. 56,141

Int. Cl. B22d 27/02

U.S. Cl. 164—250 14 Claims



A device for improving the quality of the metal of ingots, produced by the method of electroslag remelting of consumable electrodes in cooled moulds, the amplitude of the alternating current of low frequency of the installation being modulated by means of various modulators series-connected in the primary or secondary circuit of a transformer feeding the electroslag remelting installation. The modulation of the amplitude of the alternating current of a frequency equal or close to the frequency of the oscillations of the liquid metal bath causes resonance oscillations of the metal bath, which cause refining of the structure of the crystallizing ingot, elimination of dendritic non-uniformity and a higher quality of the metal.

3,693,701

CONTINUOUS CASTING PLANT FOR CONTINUOUSLY CASTING HOT LIQUID METALS

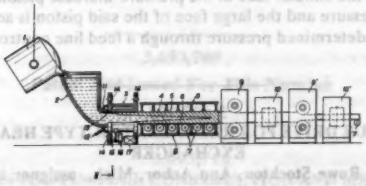
Herbert V. Waclawiczek, Duisburg, Germany, assignor to Vereinigte Osterreichishhe Eisen-und Stahlwerke Aktiengesellschaft, Muldenstrasse, Linz, Austria

Filed Dec. 22, 1970, Ser. No. 100,705

Claims priority, application Austria, Jan. 9, 1970, A 166/70

Int. Cl. B22d 11/10

U.S. Cl. 164—260 1 Claim



The invention envisages a plant for continuously casting hot liquid metals comprising an intermediate supply vessel having a substantially horizontal outlet duct, a water-cooled mould arranged with play substantially in alignment with said outlet duct, a cooling passage including guide means for continuous

cast stock following said mould, and reshaping means for further processing said cast stock, in which the mould is arranged to be rotatable around its longitudinal axis and connected to a rocking drive for oscillatory movement of said mould in peripheral direction relative to said supply vessel, said play between said mould and said supply vessel being sealed by a covering ring having inlet means for introduction of a lubricating and sealing agent. By adoption of the new arrangement according to the invention it is possible to reduce the construction height of continuous casting bays, thereby eliminating any risks of accidents involved in the previous cascade arrangement.

3,693,702

PRESSURE CASTING MACHINE WITH PRESSURE INCREASE SYSTEM

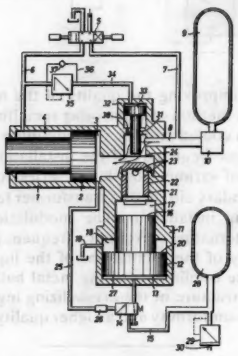
Rolf Piekenbrink, Markgrafenstrasse 58, Dusseldorf-Oberkassel, and Albert Reinhardt, Reiherstrasse 2, Monheim, both of Germany

Filed May 26, 1970, Ser. No. 40,574

Claims priority, application Germany, April 15, 1970, P 20 17 951.5

Int. Cl. B22d *17/04*

U.S. Cl. 164—314 **12 Claims**



A pressure casting machine having a moulding piston slidable in a cylinder and a pressure-increase system having a stepped piston and serving to increase the pressure in the moulding cylinder towards the end of the working stroke of the moulding piston, the pressure line leading to the working chamber of the moulding cylinder being closed by means of a valve when the pressure-increase system is in operation, wherein the annular face of the pressure-increase piston is free from pressure and the large face of the said piston is actuated by a predetermined pressure through a feed line controlled by a valve.

3,693,703

SPUR DRIVE FOR REGENERATOR-TYPE HEAT EXCHANGER

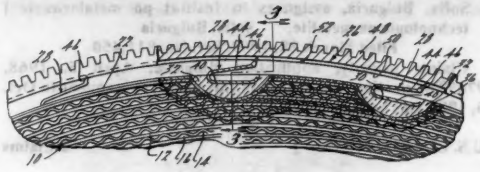
Thomas Rowe Stockton, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 31, 1970, Ser. No. 103,215

Int. Cl. F28d *19/04*

U.S. Cl. 165—8 **7 Claims**

A rimless rotary heat exchanger of the disc type having ceramic plugs buried in the peripheral face thereof. These plugs have depressions frictionally containing spring metal clips which have means in the form of a sharp spur that engage



and deform the material of a drive ring gear positioned about the peripheral face of the heat exchanger.

3,693,704

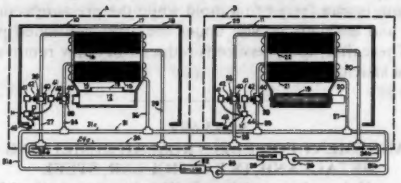
AIR CONDITIONING SYSTEM

Alwin B. Newton, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sept. 11, 1970, Ser. No. 71,550

Int. Cl. F24f *3/14*

U.S. Cl. 165—21 **7 Claims**



An air conditioning system employing separate chilled water and heated water single pipe loops and designed for use with individual room air conditioning units (inductor or fan-coil) equipped with separate heating and cooling heat exchange coils. The system provides local control at each unit, for both heating and cooling at all times when the heated water and chilled water circuits are active, as each circuit in the unit includes a circulating pump and coil, the pumps being under thermostatic control responsive to room temperature requirement.

3,693,705

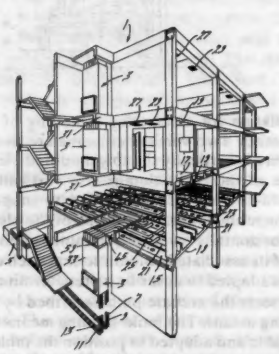
MULTIZONE AIR CONDITIONING AND VENTILATING UNIT

Robert B. Stotz, 1005 Greenridge Drive, Dayton, Ohio

Filed Jan. 21, 1971, Ser. No. 108,495

Int. Cl. F24f *3/00*

U.S. Cl. 165—22 **13 Claims**



A system for air conditioning, heating and ventilating a multistory building having a plurality of living spaces on

several of the stories. Each story has a separate unit for air conditioning, heating and ventilating all the living spaces on each story.

3,693,706

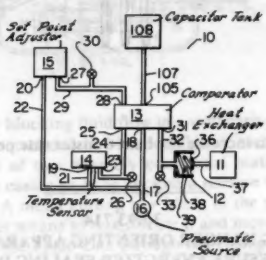
PNEUMATIC CONTROL SYSTEM

Larry V. Nisley; Klaus P. Mueller, and Kenneth G. Kreuter, all of Goshen, Ind., assignors to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 719,495, April 8, 1968, Pat. No. 3,587,395. This application July 1, 1970, Ser. No. 60,204

Int. Cl. B60h *3/04*

U.S. Cl. 165—23 **3 Claims**



This disclosure relates to a vacuum temperature control system wherein a pair of vacuum signals respectively from a temperature sensor and a temperature selecting means are translated by a comparator into a vacuum control signal that operates a temperature output means for the system in relation to the vacuum control signal to produce a proportional action thereof, the system, however, having vacuum signal means for resetting the comparator to slowly eliminate the proportional action caused by the comparator.

3,693,707

FRACTIONAL DESUBLIMATION

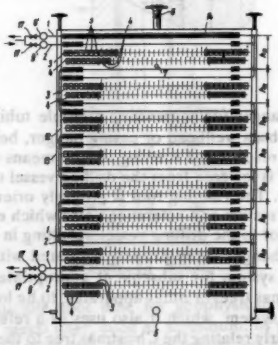
Guenther Richter, Gladbeck, Germany, assignor to Gelsenberg Benzin Aktiengesellschaft, Gelsenkirchem, Germany

Division of Ser. No. 784,284, Dec. 9, 1968, and a continuation-in-part of Ser. No. 784,284, Dec. 9, 1968. This application April 12, 1971, Ser. No. 133,130

Claims priority, application Germany, Dec. 9, 1970, P 16 68 161.1

Int. Cl. B60h *1/00*

U.S. Cl. 165—39 **14 Claims**



Separation of a component contained in a gas, by desublimation is carried out in a separator outfitted with a plurality of tube coils interposed so that turns of one coil are disposed between turns of another coil. The coils are connected in parallel so that coolant can be passed in timed sequence, successively through the coils, changing the coils used for cooling in accordance with build up of sublimate on the turns to maintain in cooling service coils not bearing excessive sublimate. The turns of each coil can be uniformly spaced, and said spacing for each coil can be the same. Said spacing can be selected to provide the residence time adjacent the separator outlet necessary to provide the desired degree of separation. Thereby, in effect, fractionation as well as separation can be realized, i.e. a sublimate of high purity can be produced. The invention is particularly effective for separation of pyromellitic acid dianhydride.

3,693,708

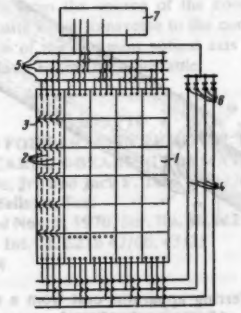
DEVICE FOR EVAPORATIVE COOLING OF METALLURGICAL FURNACES

Sergei Mikhailovich Andoniev; Gerber Leonid Moisevich; Grigory Ivanovich Kasyanov; Gennady Alexandrovich Kudinov; Dorina Borisovna Kutsykovich; Tamara Izovna Nissenbaum; Jury Borisovich Raikovsky, all of Kharkov; Mikhail Semenovich Somchenko, Kharkovskoi oblasti; Oleg Vladimirovich Filipiev, and Jury Petrovich Entis, both of Kharkov, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky i Preektny Institut po Ochistke Teknologicheskikh gazov i stochuykh vod prospekt lenina, i Ispolzovaniju Vtorichnykh Energoresursov Predpriyaty Chernoi Metallurgii, U.S.S.R., Kharkov.

Filed Sept. 30, 1970, Ser. No. 76,702

Int. Cl. F28f *27/02*

U.S. Cl. 165—101 **2 Claims**



A device for evaporative cooling of metallurgical furnaces, which comprises banks of vertically arranged cooling members connected in series, wherein pipes for passing the coolant in each bank are connected to individual supply and discharge headers.

3,693,709

Patent Not Issued For This Number

3,693,710

RADIATOR FIN-TUBE CONSTRUCTION AND METHOD

Sidney S. Drosnin, 2087-10th Ave., San Francisco, Calif.

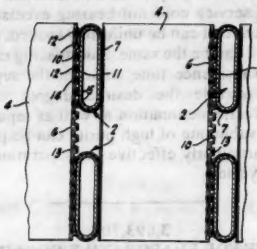
Filed April 20, 1970, Ser. No. 29,862

Int. Cl. F28f *1/10*

U.S. Cl. 165—152 **6 Claims**

Fin-tube radiator core construction and method in which the fins are formed by folding a strip of sheet metal back and

forth on itself and perforations are formed at the fold lines of the fins adjacent the tubes for receiving projections of adhesive from the coating thereof on the surface of the tube to create a strong bond between the fins and the tubes.



3,693,711

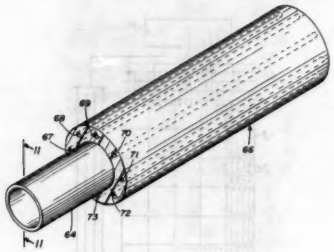
MONOLITHIC CAST BODY HEAT EXCHANGER

Alfred E. Zygiel, 2510 Hillsboro, Dallas, Tex.

Continuation-in-part of Ser. No. 871,112, Oct. 2, 1969, abandoned, Division of Ser. No. 645,436, June 12, 1967, Pat. No. 3,498,371. This application March 8, 1971, Ser. No. 121,750

Int. Cl. F28d *7/00*

U.S. Cl. 165—164 **7 Claims**



Heat transferring apparatus cast from a resinous metallic composition and having a plurality of passages formed therein. The resinous metallic composition includes a base material, such as an epoxy resin, mixed with a solidifying hardener and metallic particles to enhance the heat transferring abilities of the solidified resin. Individual heat exchanger passages are formed by pressurizing flexible tubing arranged in the desired configuration during the solidifying process of the resinous metallic composition.

3,693,712

Patent Not Issued For This Number

3,693,713

FINNED TUBE AND METHOD OF MANUFACTURE

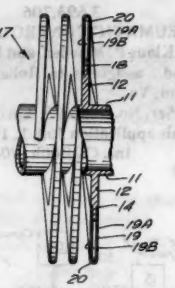
Frederick J. Stahl, Hawthorne, N.J., assignor to Curtis-Wright Corporation

Filed July 16, 1970, Ser. No. 55,494

Int. Cl. F28f *1/14*

U.S. Cl. 165—184 **3 Claims**

A finned tube which has a helical surface element formed by displacement of a portion of the tube wall and securing to the distal end edge of the surface element a helical extension member so that the surfaces of the latter lie substantially in coplanar relation to the surface element, the extension member



functioning to increase the heat transfer rate per unit length of tube.

3,693,714

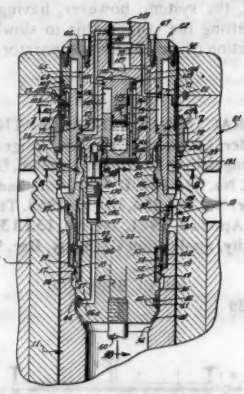
TUBING HANGER ORIENTING APPARATUS AND PRESSURE ENERGIZED SEALING DEVICE

Benton F. Baugh, Houston, Tex., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed March 15, 1971, Ser. No. 123,983

Int. Cl. E21b *33/035*

U.S. Cl. 166—.6 **32 Claims**

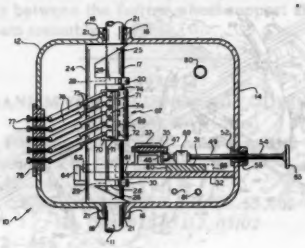


A tubing hanger for suspending multiple tubing strings is seated in a subsea wellhead or casing hanger, being properly oriented with respect to a running tool by means of which the tubing hanger is lowered from the drilling vessel to seat in the casing hanger. The running tool is properly oriented relative to a guidance system as a reference point which extends from the subsea floor to the drilling vessel, resulting in the multiple string tubing hanger being properly oriented with respect to the guidance system for subsequent appropriate connection with a Christmas tree, or other apparatus, to be lowered down the guidance system, which it also uses as a reference point, thereby properly relating the Christmas tree to the multiplicity of passages in the tubing hanger. The tubing hanger is sealed against the wellhead in which it is seated by hydraulic actuation of the seal and without the necessity for transmitting torque through any parts of the apparatus.

3,693,715
APPARATUS FOR BLOCKING FLUID FLOW IN A WELL CASING

John M. Brown, 5787 Pine Grove Road, R.D. # 3, Clay, N.Y.

Filed May 14, 1971, Ser. No. 143,406
Int. Cl. E21b *29/00*
U.S. Cl. 166—55 10 Claims



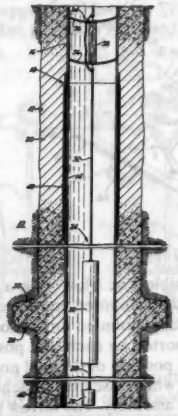
Apparatus for blocking fluid flow in a well casing where the well is out of control due to blowout, fire or casing leaks. A shell comprised of two hingedly connected mating parts is mounted on the casing so as to enclose a portion thereof in a sealed manner. A metal cutting saw blade in the shell is provided with power means to reciprocate it and move it into the casing whereby the blade cuts through the casing. The width of the blade is greater than the casing diameter so that upon completion of the cut the blade blocks the fluid flow. This permits a shut off valve or other control means to be installed in the casing above the shell after which the saw can be withdrawn and the shell removed for re-use.

3,693,716
Patent Not Issued For This Number

3,693,717
REPRODUCIBLE SHOT HOLE

Paul C. Wuenschel, Glenshaw, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Oct. 22, 1970, Ser. No. 82,907
Int. Cl. E21b *33/13*
U.S. Cl. 166—285 3 Claims

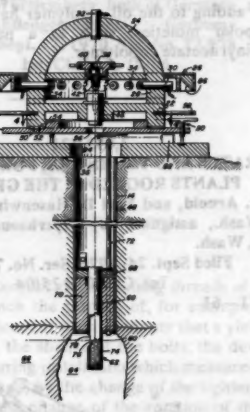


A reproducible shot hole for geophysical use wherein a deformable metal liner, such as aluminum, of predetermined diameter, wall thickness, and alloy is selected, and the annulus between the liner and the hole filled with sand-cement under pressure, so that the lined hole will withstand repeated explosions by expanding.

3,693,718
LASER BEAM DEVICE AND METHOD FOR SUBTERRANEAN RECOVERY OF FLUIDS

Daniel W. Stout, Lake Park, Fla., assignor to Paul Washburn, David J. Rupp, Erwin D. Latimer and Henry McGinnes, all of Palm Beach, Fla.

Filed Aug. 17, 1970, Ser. No. 64,436
Int. Cl. E21b *43/24*
U.S. Cl. 166—302 16 Claims

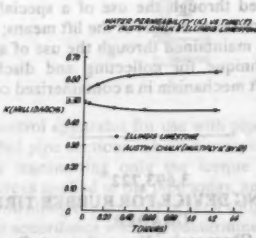


Monochromatically identical beams emitted from a plurality of laser devices positioned in radial relation to a common optical axis along which a composite beam of concentrated energy is projected. A rotatable reflective lens device located a remote distance from the source of the composite beam directs the composite beam transverse to the common optical axis. The direction of the common optical axis and the concentration of the laser beams are adjustable.

3,693,719
PROCESS FOR PARAFFIN REMOVAL FROM HYDROCARBON-BEARING FORMATIONS

Thomas E. Sample, Jr., and Jack F. Tate, both c/o Texaco Inc., P.O. Box 425, Bellaire, Tex.

Filed Nov. 2, 1970, Ser. No. 86,242
Int. Cl. E21b *43/00*, *43/25*
U.S. Cl. 166—304 6 Claims



Solid paraffin-like hydrocarbon materials derived from petroliferous fluids which have been deposited in hydrocarbon-bearing formations are removed by introducing into the formation in the vicinity of the well bore a hydrolyzable, aprotic, halogenated organic material, such as allyl chloride, whereby the said paraffin-like hydrocarbon material is removed, and the permeability and porosity of the formation and production of hydrocarbons therefrom is increased, the well is returned to production and the hydrolyzable, aprotic, halogenated organic compound containing the dissolved or peptized paraffin is removed from the well and conducted to a vessel containing water or a base dissolved in water.

3,693,720

CRUDE OIL RECOVERY METHOD USING A POLYMERIC WAX INHIBITOR

Lee A. McDougall, Houston, Tex.; Albert Rossi, Warren, N.J., and Max J. Wisotsky, Highland Park, N.J., assignors to Esso Research and Engineering Co.

Filed Jan. 29, 1971, Ser. No. 111,151
Int. Cl. E21b 43/00; C09k 3/00
U.S. Cl. 166—304 8 Claims

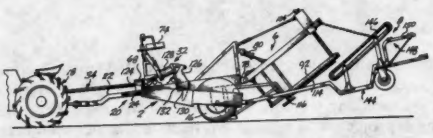
The recovery of crude oil may be improved by inhibiting deposition of wax from the oil. Wax deposition may be inhibited by adding to the oil a polymer having pendant polar and non-polar moieties, such as a partially hydrolyzed ethylene-vinyl acetate copolymer.

3,693,721

APPARATUS AND TECHNIQUE FOR HARVESTING PLANTS ROOTED IN THE GROUND

Eugene W. Arnold, and Earl D. Hasenwinkle, both of Longview, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Sept. 24, 1970, Ser. No. 75,219
Int. Cl. A01d 25/04
U.S. Cl. 171—61 18 Claims



The apparatus includes means for severing the body of earth contiguous to the roots of the plants from the surrounding ground; and means for relatively removing the plants from the body of root-contiguous earth, including means for lifting the plants in relation to the ground, and means for agitating the body of root-contiguous earth when it is severed from the ground, so as to loosen the earth and reduce its cohesion with respect to the roots, before the plants are lifted in relation to the ground. The apparatus is thus able to harvest the plants without undue damage to the roots. In addition, damage to the stems is minimized through the use of a special elastomer-faced belt lift mechanism as part of the lift means; and a rapid harvesting rate is maintained through the use of a special apparatus and technique for collecting and discharging the plants from the lift mechanism in a containerized condition.

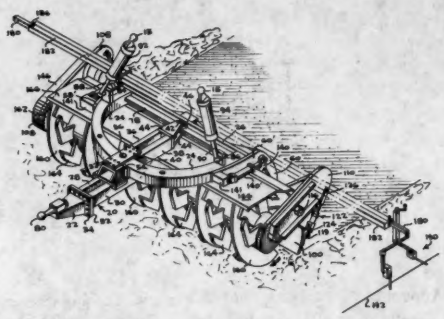
3,693,722

FINE GRADING DEVICE FOR RUBBER TIRE ROAD GRADER

Robert L. Brown, Chesapeake, Va., assignor to Brohigbu, Ltd., Norfolk, Va.

Filed Aug. 11, 1970, Ser. No. 62,917
Int. Cl. E02f 3/76; A01b 49/02; E02f 3/12
U.S. Cl. 172—4.5 14 Claims

A grading blade and parallel rotary auger are supported on an auxiliary frame transversely with respect to a grader vehicle from which the frame is supported with the auger being connected to the blade for unitary pivotal movement about a pivot point on the frame between the front of the blade and the rear of the auger in general vertical alignment with the cutting edge of the blade so that the height of the auger can be pivotally adjusted by hydraulic cylinder means with respect to the cutting edge of the blade for differing soil conditions by pivoting the auger and blade with there being a negligible vertical displacement of the cutting edge of the blade; an automatically operable control means actuates hydraulic cylinders supporting the auxiliary frame from the vehicle in response to



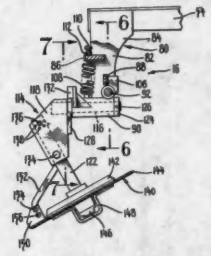
signals from a guide line extending along the path of movement of the vehicle for maintaining the cutting edge of the blade at a given elevation with respect to the guide line regardless of the height of the auger with respect to the cutting edge of the blade as adjusted by the operator for differing soil conditions.

3,693,723

SELF-REVERSING REAR FURROW WHEEL ASSEMBLY FOR A MOUNTED REVERSIBLE DISK PLOW

Jose Cavazos Guardado, Alcatraz 31; Jorge Cervantes Talavera, Madero 303-A, and Alcibiades Gonzalez Ibarra, Allende 13 Sur, all of Queretaro, Mexico

Filed May 12, 1971, Ser. No. 142,704
Int. Cl. A01b 3/16, 3/40
U.S. Cl. 172—212 5 Claims



A mounted reversible disc plow with a headstock, a tool beam assembly pivotally mounted on the headstock, a plurality of tool posts pivotally mounted on the tool beam assembly, a disc rotatably supported by each tool post, disc positioning means to control the position of the tool posts, a reversing assembly and a furrow wheel assembly attached to the rear portion of the tool beam assembly. The furrow wheel assembly includes a furrow wheel support assembly, a furrow wheel axle assembly and a furrow wheel. The furrow wheel support assembly is pivotally attached to the tool beam assembly for pivotal movement about an axis transverse to a vertical plane through the longitudinal axis of the tool beam assembly. A stop limits movement of the rear portion of the furrow wheel support assembly down and away from the rectangular tube

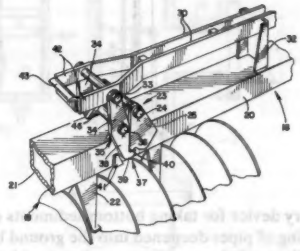
member of the tool beam assembly. An adjustable spring biases the furrow wheel support assembly toward the stop. The furrow wheel axle assembly extends to the rear of and is pivotally attached to the furrow wheel support assembly for limited pivotal movement about an axis in a vertical plane through the longitudinal axis of the tool beam assembly. The furrow wheel is rotatably attached to an adjustable arm on the furrow wheel axle assembly at a point spaced to the rear of the pivotal axis between the furrow wheel support assembly and the tool beam assembly.

3,693,724

MECHANISM FOR FOLDING AND LOCKING DISK HARROW GANGS

Jerome L. Fueslein, and Fred R. Andrews, both of Stockton, Calif., assignors to International Harvester Company, Chicago, Ill.

Filed July 17, 1970, Ser. No. 55,800
Int. Cl. A01b *63/32, 65/02*
U.S. Cl. 172—456 3 Claims



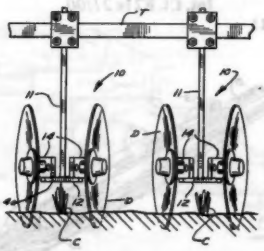
A folding wing disk harrow has a double ended hydraulic cylinder which is connected to wings at opposite ends of a central section and which automatically actuates latches to lock the wings in their extended operating position and to release the latches when the wings are to be folded.

3,693,725

DIVERGING TOOL MOUNTS HAVING A PLURALITY OF APERTURES FOR LATERAL ADJUSTMENT OF THE TOOLS

Wayne S. Tonsfeldt, Sabin, Minn.

Continuation-in-part of Ser. No. 559,616, June 22, 1966, abandoned. This application Feb. 16, 1970, Ser. No. 879,637
Int. Cl. A01b *39/22, 65/02*
U.S. Cl. 172—655 1 Claim



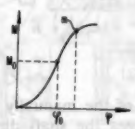
This invention relates to a tool mounting bar for mounting various pairs of cultivating and other field preparing tools onto a tool bar and includes a generally vertically arranged upright support member for attachment to a tool bar and a pair of diverging implement mounting elements at the lower end thereof such that a pair of implements may be mounted on each individual support member. The diverging support members include two modifications, one providing a plurality of apertures for mounting of various elements thereon and the other providing a slideable clamping member for sliding and positioning on the diverging members with the implement being connected directly to the clamping device. This slideable clamping device permits a wide range of adjustments for the implements.

3,693,726

TIGHTENING DEVICE FOR AUTOMATICALLY TIGHTENING BOLTS AND THE LIKE

Rudolf Hornig, Hofingen, Wurttenberg, and Siegfried Sailer, Grossheppach, Wurttemberg, both of Germany, assignors to Daimber-Benz Aktiengesellschaft, Germany

Filed Sept. 17, 1970, Ser. No. 72,978
Int. Cl. B23p *19/06*
U.S. Cl. 173—12 29 Claims



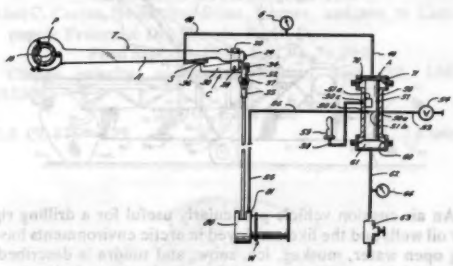
A device for automatically tightening threads of a threaded connection, in which the threads of, for example, bolts are adapted to be tightened in such a manner that a yielding of the material occurs in the shanks of the bolts; the device is provided with a measuring installation which measures, when the yield point is reached, by the change of the tightening torque of as function of the change of the rotation of the bolt and then turns off the device for tightening the bolt.

3,693,727

TORQUE CONTROL APPARATUS

Leo A. Bell, Villa Maud, Kappara Road, San Gwann, Malta

Filed Nov. 2, 1970, Ser. No. 86,108
Int. Cl. B25b *23/14*
U.S. Cl. 173—12 7 Claims



Torque control apparatus for use with pipe tongs in assembling threaded pipe sections, wherein means are provided for sensing and transmitting only the torque producing component of forces applied to the pipe tongs, and means are provided for controlling the amount of such torque applied to the pipe tongs in accordance with a predetermined limit.

3,693,728

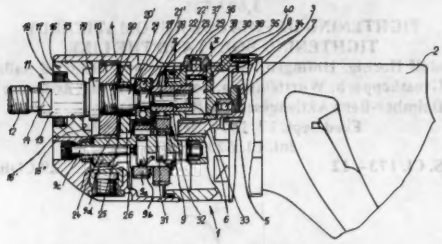
PERCUSSION AND ROTARY DRILLING MACHINE

Reinhold Stroezel, Reuteweg 15,, 7022 Leinfelden, Germany

Filed Nov. 6, 1970, Ser. No. 87,459
Claims priority, application Germany, Nov. 15, 1969, P 19 57 505.4
Int. Cl. E21c *3/32*
U.S. Cl. 173—13 11 Claims

A drilling machine has a tool holder shaft on which are mounted a spring and a blocking sleeve which abuts one or the other of two eccentric abutment faces of a manually turnable

member. In a first position of the manually turnable member, the spring permits movement of the shaft due to pressure against the workpiece to a first axial position in which the shaft is axially reciprocated by suitable displacement means during rotation, and performs a percussion drilling operation.



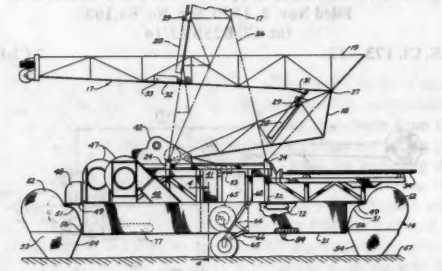
In a second position of the manually turnable member, the blocking sleeve engages the shaft directly, and blocks the same in a second axial position in which the shaft is not reciprocated but only rotated during drilling, irrespective of the pressure applied by the shaft to the workpiece.

3,693,729

AIR CUSHION DRILLING VEHICLE

Leon C. Blurton, Brea, Calif., and Saverio J. Cina, Brooklyn, assignors to Global Marine Inc., Los Angeles, Calif.

Filed Feb. 19, 1970, Ser. No. 12,778
Int. Cl. E21b 7/12
U.S. Cl. 173—23 **12 Claims**



An air cushion vehicle particularly useful for a drilling rig for oil wells and the like employed in arctic environments having open water, muskeg, ice, snow, and tundra is described. The vehicle includes a watertight compartmented chassis or platform about which is provided a flexible skirt for cooperation with a surface for minimizing air leakage therebetween. Means are provided on the platform for supplying a volume of air under pressure to the region within the skirt for raising the pressure thereunder and thereby lifting the principal portion of the weight of the platform. Wheels are also provided for resiliently applying a force to the surface on which the vehicle rides to provide sufficient contact with the surface to provide control of the vehicle as it is towed. The means for supplying air comprises blowers selectively connected to prime movers, such as diesel engines, which are also selectively connectable to the draw works of the drill rig. The drill rig also includes a tower foldable between an erect drilling position and a lowered transporting position with the mode of folding such that the transverse center of gravity of the tower is not significantly shifted between these two positions. Means are also described for launching the air cushion vehicle from a ship and for preparing an arctic drilling site for the air cushion supported drilling rig.

3,693,730

VIBRATORY DEVICE FOR TAKING BOTTOM SEDIMENTS CORES

Zorab Parnakovich Edigarian; Evgeny Ivanovich Kudinov, and Vladimir Evgenievich Sukhov, all of Moscow, U.S.S.R., assignors to Institut Geologii i razrabotki gorjuchikh rskopoemofh, Moscow, U.S.S.R.

Filed July 22, 1970, Ser. No. 57,133
Int. Cl. E21b 7/12
U.S. Cl. 175—6 **4 Claims**

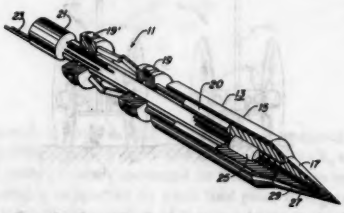
A vibratory device for taking bottom sediments cores, comprising a string of pipes deepened into the ground by means of a vibrator disposed thereon. In accordance with the present invention it is provided with an arrangement connected with the vibrator and providing for periodical engagement and disengagement of the vibrator with the string of pipes, and a hoist providing for periodical displacement of the vibrator which is originally disposed on the lower portion of the string of pipes up the latter as it is being deepened, and operatively coupled with the engaging arrangement.

3,693,731

METHOD AND APPARATUS FOR TUNNELING BY MELTING

Dale E. Armstrong, Santa Fe; Berthus B. McInteer; Robert L. Mills; Robert M. Potter; Eugene S. Robinson; John C. Rowley, and Morton C. Smith, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Jan. 8, 1971, Ser. No. 104,872
Int. Cl. E21c 21/00
U.S. Cl. 175—11 **6 Claims**



A machine and method for drilling bore holes and tunnels by melting in which a housing is provided for supporting a heat source and a heated end portion and in which the necessary melting heat is delivered to the walls of the end portion at a rate sufficient to melt rock and during operation of which the molten material may be disposed adjacent the boring zone in cracks in the rock and as a vitreous wall lining of the tunnel so

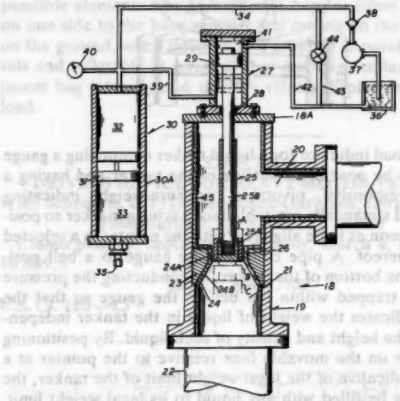
formed. The heat source can be electrical or nuclear but for deep drilling is preferably a nuclear reactor.

3,693,732

APPARATUS FOR CONTROLLING PRESSURE IN A WELL

Nestor Sabi, Gretna, La., assignor to Edwards Engineering Corporation, New Orleans, La.

Filed Oct. 15, 1970, Ser. No. 80,946
Int. Cl. E21b *21/00*
U.S. Cl. 175—25 **13 Claims**



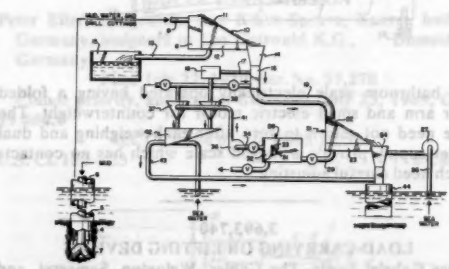
This disclosure is directed to a system for controlling pressure in a well bore having a drill string through which a drilling fluid is directed. A balanced piston well choke is disposed in the drilling fluid return line which is automatically responsive to varying flow rates of the return drilling fluid in a manner to maintain a substantially constant back pressure on the return drilling fluid.

3,693,733

METHOD AND APPARATUS FOR AVOIDING WATER POLLUTION AT AN OFFSHORE DRILLING SITE

Loy P. Teague, Morgan City, La., assignor to Texaco Inc., New York, N.Y.

Filed March 8, 1971, Ser. No. 121,644
Int. Cl. E21b *21/00*
U.S. Cl. 175—66 **11 Claims**



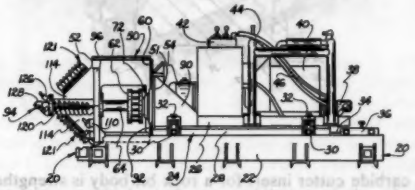
Method and apparatus for treating well drilling cuttings that normally result from the boring of an oil or gas well in an offshore body of water. The treating process includes the sequential separation and washing of the drilling cuttings to free them of water contaminating components. The washing is achieved through a detergent circulatory system in which particulated cuttings are removed from the mud. The cuttings are then washed to remove possible water contaminating components therefrom. Thereafter, the drilling cuttings are rinsed and returned to the body of water, free of both water polluting elements and the detergent washing agent.

3,693,734

BORING AUGER FOR HORIZONTAL EARTH BORING MACHINE

Albert R. Richmond, West Salem, Ohio, assignor to The Richmond Manufacturing Company, Ashland, Ohio

Filed Oct. 30, 1970, Ser. No. 85,614
Int. Cl. E21c *1/94, 13/02*
U.S. Cl. 175—122 **12 Claims**



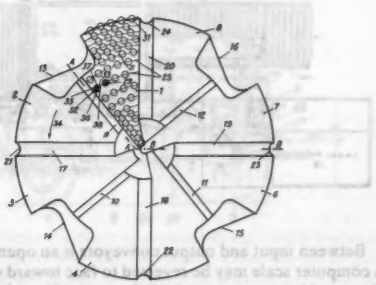
A portable earth boring machine adapted for horizontal boring of shafts for the insertion of pipelines in installations where excavation from the surface is undesirable. The machine is characterized by a novel earth boring auger for effectively drilling pipeline holes under difficult earth conditions such as are encountered in boring earth of hard rock content. The novel auger comprises a base plate, spaced auger side plates forming rigid gussets, with such plates providing bit mounting surfaces for a unique and efficient array of a plurality of bits mounted on the auger.

3,693,735

DRILLING TOOL WITH ELEMENTS HAVING DIAMOND-STUDDED ATTACK SURFACE

Abel C. Cortes, Neuilly-sur-Seine, France, assignor to Compagnie Francaise Des Petrole, Paris, France

Filed Sept. 29, 1970, Ser. No. 76,512
Claims priority, application France, Sept. 29, 1969, 6933081
Int. Cl. E21b *9/36*
U.S. Cl. 175—329 **7 Claims**



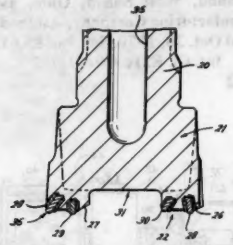
A drilling tool for drilling in either hard or soft ground at high speeds and incorporating a plurality of diamond-studded protuberances formed on the end cutting surface of the tool, with a plurality of radially outwardly extending grooves formed in the end of the tool and having additional circular grooves formed between rows of protuberances to assist in removal of the debris. The protuberances are formed so that the diamond projections thereon are each aligned with each other in a given row in the direction of rotation to assist in cutting.

3,693,736

CUTTER INSERT FOR ROCK BITS

Jimmy D. Gardner, Houston, Tex., assignor to Mission Manufacturing Company, Houston, Tex.

Filed Sept. 4, 1969, Ser. No. 855,208
Int. Cl. E21c 13/01
U.S. Cl. 175—410 3 Claims



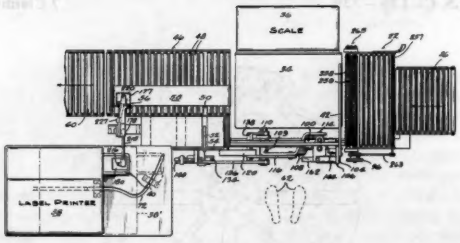
A carbide cutter insert for a rock bit body is strengthened against breakage and its removal and replacement are facilitated by encasing the insert in a protective jacket of material substantially softer than the carbide. The composite element is then firmly pressed and/or bonded in an orifice in the cutting face of the bit body. The element can be readily removed simply by cutting away the softer jacket by a suitable machine tool operation without damaging the body bore.

3,693,737

REVERSIBLE MANUAL AND AUTOMATIC LABELING MACHINE WITH WEIGHER

John T. Young, Lake Bluff, Ill.; Charles E. Michels, Racine; Thomas C. Zimmerman, and Gilbert M. Hagemann, both of Franksville, all of Wis., assignors to Wrapping Machinery Company, Inc., Franksville, Wis.

Division of Ser. No. 732,750, May 28, 1968, abandoned. This application July 22, 1970, Ser. No. 57,282
Int. Cl. G01g 13/00, 13/22, 15/00
U.S. Cl. 177—52 5 Claims



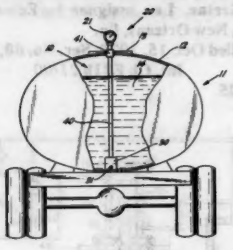
Between input and output conveyors is an opening in which a computer scale may be reversed to face toward either side of the machine, parts required for propelling the workpiece across the scale table being interchangeable from one side to the other. Regardless of scale position, mechanism associated with the output conveyor rectifies successive workpieces on the conveyor rather than the scale platform to align them with the labeler for automatic operation irrespective of the side toward which the scale faces. The label printer remains at one side of the output conveyor and is operable either manually or automatically. The printer is mounted for bodily movement to facilitate manual operation whether the operator stands at one side or the other side of the machine.

3,693,738

LEGAL LOAD INDICATOR FOR A LIQUID TANKER

Ottie H. Andrews, 2230 W. Orange Avenue, Anaheim, Calif.

Filed April 7, 1971, Ser. No. 131,869
Int. Cl. G01g 19/10
U.S. Cl. 177—141 8 Claims



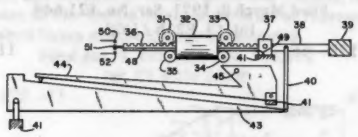
A legal load indicator for a liquid tanker comprising a gauge adapted to be positioned outside of the tanker and having a pressure responsive, pivotable, pressure-weight indicating pointer and a manually rotatable face having a marker so positioned thereon as to be alignable with the pointer in a selected position thereof. A pipe connects the gauge to a bell positioned at the bottom of the tanker for conducting the pressure of the air trapped within the bell to the gauge so that the pointer indicates the weight of liquid in the tanker independently of the height and density of such liquid. By positioning the marker on the movable face relative to the pointer at a position indicative of the legal weight limit of the tanker, the tanker may be filled with any liquid to its legal weight limit. According to a preferred embodiment of the present invention, the apparatus also includes a mechanism for removing hardening materials from the bell and pipe to insure proper operation of the gauge.

3,693,739

BATHROOM SCALE

Arpiar Kaloustian, 10 Arch St., Providence, R.I., and D. Richard Small, 21 Latnern Lane, Sharon, Mass., assignor to said Arpiar Kaloustian by said Small

Filed June 2, 1971, Ser. No. 149,293
Int. Cl. G01g 7/00
U.S. Cl. 177—214 6 Claims



A bathroom scale electrically operated having a folded lever arm and small electric motor for counterweight. The scale need not return to zero after each weighing and dual power supply provide a rugged scale which has no contacts which need careful adjusting.

3,693,740

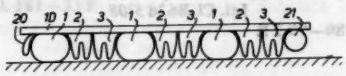
LOAD-CARRYING OR LIFTING DEVICES

James Gabriel Lewis, The Gables, Wrington, Somerset, and Owen Temple Lewis, Quarry House, Seale, Surrey, both of England

Filed Oct. 26, 1970, Ser. No. 83,889
Claims priority, application Great Britain, Oct. 30, 1969, 53,115/69
Int. Cl. B62d 67/02
U.S. Cl. 180—8 R 9 Claims

Apparatus for raising, carrying, or transporting loads, comprises a plurality of expandible elements connected to a base

support, and each arranged on expansion to increase the perpendicular displacement between the base support and a load carrying surface of the respective element, and means for creating relative lateral displacement between the base support and the load carrying surface of each element. The ex-



pandible elements may be inflatable bags or tubes connected on one side to the base support and resting on the other side on the ground, when inflated, and grouped in parallel rows or sets and inflatable in series so that one bag displaces the adjacent bag laterally and thereby effects displacement of the load.

3,693,741

DRIVING DEVICE FOR HEAVY MOTOR-TRUCKS

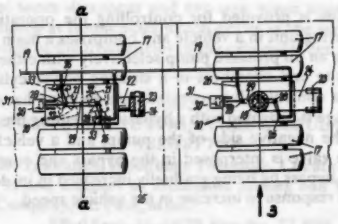
Willy Scheuerle, D-7114 Pfedelbach-Ohringen, Germany

Filed March 3, 1970, Ser. No. 15,986

Claims priority, application Germany, March 4, 1969, P 19 10 809.9

Int. Cl. B60k 7/00

U.S. Cl. 180—23 12 Claims



A driving device for heavy motor trucks in which each axle assembly supports at least one wheel on each side and comprises an axle housing block containing two hydraulic motor units located along the longitudinal axis of the vehicle on either side of the wheel center plane, preferably in the form of adjustable stroke motor units for driving the wheels.

3,693,742

VEHICLE TRANSMISSION

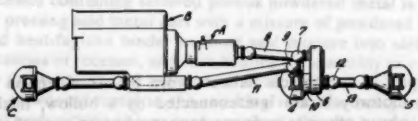
Peter Eiler, Langenfeld, and Klaus Sprave, Kaarst, both of Germany, assignors to Leo Gottwald K.G., Dusseldorf, Germany

Filed July 22, 1970, Ser. No. 57,270

Claims priority, application Germany, July 25, 1969, G 69 29 464.0

Int. Cl. B62d 61/10; B60k 17/36

U.S. Cl. 180—23 6 Claims



A vehicle having a front axle and tandem rear axles all of which are driven from a speed change gearbox through a common distributor gearbox which is mounted on one of the tandem axles.

3,693,743

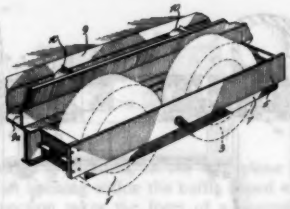
OSCILLATING TANDEM WHEELS

Jean-Paul Tanguay, St-Prime, Quebec, Canada, assignor to Placements Jean-Paul Tanguay Ltee, Comte de Roberval, Province of Quebec, Canada

Filed Sept. 25, 1970, Ser. No. 75,475

Int. Cl. B62d 61/10

U.S. Cl. 180—24.05 8 Claims



For a heavy vehicle such as a mobile tree slasher there is provided a device which is adapted to facilitate the traction of such vehicle over rough and irregular surfaces. The device consists of a pair a oscillating tandem wheels and should be capable of allowing free oscillation of the tandem wheels about an axis which is located substantially between the axis of both tandem wheels. The heavy vehicle has a power arrangement which is connected to drive at least one and preferably both of the oscillating tandem wheels while allowing free oscillation to the tandem wheels.

3,693,744

MULTI-PURPOSE VEHICLE

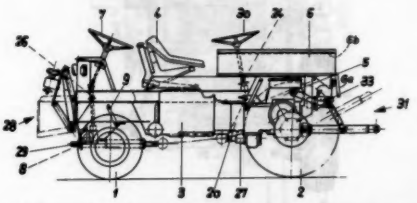
Josef Horn, Rimschweiler; Kurt Neumeier, and Franz Scharfenberger, both of Zweibrucken, all of Germany, assignors to Karl Peschke Kapitalverwaltungsgesellschaft Karl Peschke mbH, Zweibruckan/Pfalz, Germany

Filed March 13, 1970, Ser. No. 19,425

Claims priority, application Germany, March 13, 1969, P 19 12 641.1

Int. Cl. B60n 1/02; B60k 17/28

U.S. Cl. 180—53 R 2 Claims



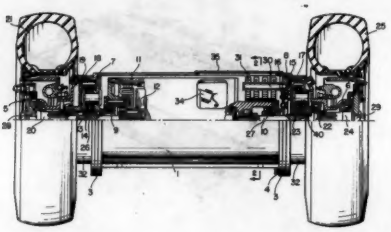
Multi-purpose vehicle having a steering axle with small wheels and a rigid drive axle with large wheels for supporting and operating tools to be mounted on the vehicle and a vehicle propulsion means for moving in two directions of travel, in street driving direction and work driving direction, which has a driver seat disposed generally centrally pivotable through a 180° angle, one each steering wheel and foot pedal levers for gas, clutch and brake in each direction of travel, and the other operating and control levers for operating the vehicle and the tools carried thereby disposed laterally of the driver's seat.

3,693,745

DRIVING AXLE FOR ELECTRIC VEHICLES

Ivan Yordanov Petrov, Sofia, Bulgaria, assignor to Nipkien, Sofia, Bulgaria

Filed May 11, 1970, Ser. No. 36,166
Claims priority, application Bulgaria, May 9, 1969, 12214
Int. Cl. B60k 7/00
U.S. Cl. 180—60 7 Claims



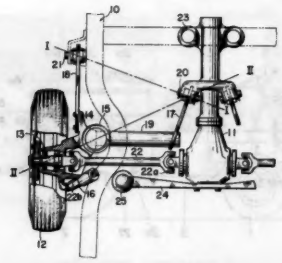
A driving axle for electric vehicles. An electric motor with field and armature rotating in opposite directions is mounted in a hollow beam. Two reduction gears of the planetary type are mounted in axle housings affixed at each end of the hollow beam, the axle housings rotatably mounting two coaxial vehicle wheels. One of the reduction gears is drivingly connected to one of the field and armature; the other of the reduction gears is drivingly connected to the other of the field and armature. Accordingly, one wheel is driven by the field, and the other wheel is driven by the armature.

3,693,746

AUTOMOTIVE SUSPENSION MECHANISM

Akira Yamamoto, No. 1024 Shimanagatami-cho, Minami-ku, Yokohama, Japan

Filed Nov. 5, 1969, Ser. No. 874,319
Claims priority, application Japan, Nov. 14, 1968, 43/82866
Int. Cl. B60g 11/36
U.S. Cl. 180—73 TL 14 Claims



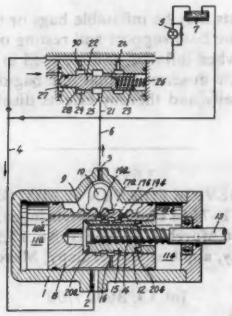
A rear suspension mechanism of motor vehicles having a pair of trailing arms and a pair of axle drive shafts with inner and outer universal joints, each of the trailing arms being made up of an inner and outer leaves connected with each other through a connecting member connected to the wheel hub and the axle drive shaft being of the type that no positively sliding mechanism is involved. The suspension mechanism permits the driving wheels to assume proper camber and steer angles and to move in the fore-and-aft direction of the vehicle.

3,693,747

APPARATUS FOR CONTROLLING THE OPERATION OF POWER STEERING APPARATUS IN A VEHICLE

Masao Nishikawa, Saitama-ken, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1970, Ser. No. 80,338
Claims priority, application Japan, Oct. 13, 1969, 44/81124
Int. Cl. B62d 5/08
U.S. Cl. 180—79.2 R 1 Claim



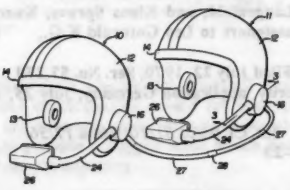
Apparatus is provided for controlling the operation of a power steering unit in a vehicle and comprises a main passage connecting an oil pressure pump selectively with either one of two opposite end chambers in a steering power cylinder by means of a control valve operated by a steering handle. The main passage is provided with a bypass connecting the positive side and the negative side of the pump, and a vehicle speed responsive valve is interposed in the bypass and controls the size of the bypass by being gradually increased in its degree of opening in response to increase in the vehicle speed.

3,693,748

MOTORCYCLE HELMET COMMUNICATION SYSTEM

Doyal H. Jones, 176 Barringron Rd., and Hanna Stibel, 88 Marborough Dr., both of Bloomfield Hills, Mich.

Filed Nov. 10, 1971, Ser. No. 197,470
Int. Cl. G10k 11/12
U.S. Cl. 181—20 4 Claims



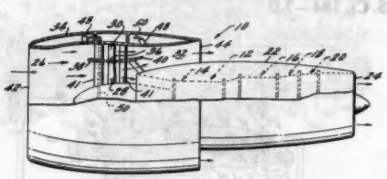
A pair of motorcycle helmets worn by two riders on the same motorcycle are interconnected by a hollow, flexible tube, whose opposite ends are connected to an ear covering portion of each helmet. Each helmet also has a stiffer, speaking tube, having an end connected to the same helmet portion as the flexible tube, and an opposite end connected to a mouthpiece located just forwardly of the wearer's mouth. Thus, the two helmet wearers can talk to each other through the tubes as well as hear themselves talk.

3,693,749

REDUCTION OF GAS TURBINE ENGINE NOISE ANNOYANCE BY MODULATION

Russell E. Motsinger, Cincinnati, and Edwin B. Smith, Mason, both of Ohio, assignors to General Electric Company

Filed April 26, 1971, Ser. No. 137,516
Int. Cl. F01n 1/06; B64d 33/06
U.S. Cl. 181—33 F 10 Claims



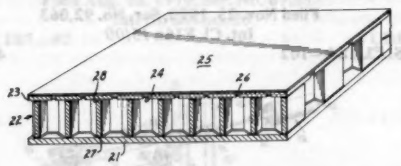
Method and apparatus for reducing the audible or annoying sound i.e., the noise emanating from a gas turbine engine are described. The sound energy is modulated by imposing on it a higher frequency sound source, which may be of either higher or lower intensity. In one form, the modulation is achieved by producing a higher frequency sound source with an ultrasonic siren. The higher frequency sound energy and the sound energy generated by the gas turbine engine interact so that the original tones disappear and two new tones appear, the new tones being at frequencies which occur at the sum and at the difference of the frequencies of the original tones.

3,693,750

COMPOSITE METAL STRUCTURE USEFUL IN SOUND ABSORPTION

Philip D. Takkunen, Woodbury Township, County of Washington, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 21, 1970, Ser. No. 73,890
Int. Cl. E04b 1/86; B22f 7/04
U.S. Cl. 181—33 G 7 Claims



A composite metal structure, useful in sound absorption applications, comprising a metal part having perforations or recesses containing sintered porous powdered metal is made by pressing said metal part with a mixture of powdered metal and heat-fugitive binder to force said mixture into said perforations or recesses, and then heating the assembly to volatilize the burn-off said binder and sinter said powdered metal, the powdered metal in the resulting structure being held in said perforations or recesses by a metallurgically integral bond as well as mechanical bond.

3,693,751

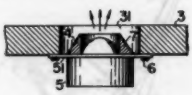
Patent Not Issued For This Number

3,693,752

LOUD SPEAKER SYSTEM

Shouzo Kinoshita, Tokorozawa and Isao Yamamura, Tokyo, both of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sept. 28, 1971, Ser. No. 184,404
Claims priority, application Japan, Sept. 29, 1970, 45/96093; Sept. 29, 1970, 45/96094
Int. Cl. G10k 13/00; H04r 1/28
U.S. Cl. 181—31 A 6 Claims



A loud speaker is installed on the rear plane of a baffle board facing an opening within the baffle board which opening in cross section takes the form of a narrow forwardly directed cone and an annular acoustic resistance member which is triangular shaped in section is fixed to the cutting plane of the opening. Alternatively, a ring member which narrows in a forward direction to form a forwardly narrowing cone in cross section is fixed to the front of a loud speaker flange and fits within a baffle board opening with the flange installed on the rear plane of the baffle board. An annular acoustic resistance member of triangular cross section is fixed to the inside surface of the forwardly narrowing ring or to the front surface of the loud speaker flange internally of the ring.

3,693,753

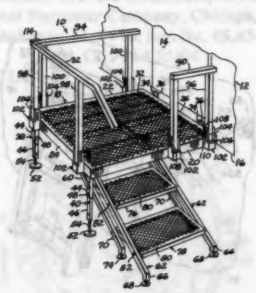
Patent Not Issued For This Number

3,693,754

PORTABLE FOLDING STEPS AND LANDING FOR A MOBILE HOME AND THE LIKE

Le Roy O. Butler, Route 1, Box 4410, Sutherlin, Oreg.

Filed March 16, 1971, Ser. No. 124,704
Int. Cl. E06c 1/383
U.S. Cl. 182—86 4 Claims



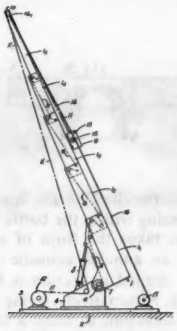
A rectangular platform is removable secured horizontally by one side to one side wall of a mobile home below the lower limit of its door. A pair of telescoping legs are pivotally connected in depending relation to the opposite side of the platform in under-the-platform folding relation. A pair of steps are similarly connected with and supported by pairs of bars pivotally connected with the platform in a downwardly and outwardly projecting direction. Hand rails are supported by upstanding supports pivotally connected with marginal side edges of the platform. The hand rail supports, legs and pairs of step supporting bars are foldable towards the respective upper and lower surfaces of the platform for collapsing and rendering the device portable.

3,693,755

DEVICE FOR PREVENTING FALLING DOWN OF LIFTER OF FIRE FIGHTING LADDER-EQUIPPED VEHICLE

Fusaji Terayama, Osaka, Japan, assignor to Morita Fire Pump Mfg. Co., Ltd., Osaka, Japan

Filed Aug. 3, 1970, Ser. No. 60,573
Int. Cl. E06c 7/16
U.S. Cl. 182—102 6 Claims



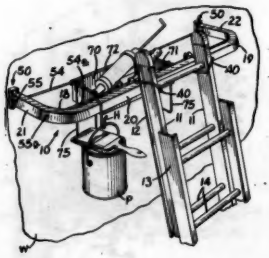
A falling down-preventive cable is provided in addition to a lifting cable, with the intermediate portion of said falling down-preventive cable being wrapped a plurality of turns around a drum or pulley provided in a lifter, and brake means for said drum or pulley is held inactive during normal operation by the weight of the lifter, thereby permitting the up and down movements of the lifter. Upon breakage of the lifting cable, the brake means is actuated to control the rotation of the drum or pulley and henceforth said falling down-preventive cable prevents the lifter from falling down. Other advantages and details of the construction will be made clear.

3,693,756

LADDER STABILIZER

Patrick J. Walker; Harold W. Stillman, Jr., Chicago, Ill., assignor to Kinkead Industries, Incorporated, Chicago, Ill.

Filed Dec. 14, 1970, Ser. No. 97,809
Int. Cl. E06c 7/14, 7/48
U.S. Cl. 182—129 7 Claims



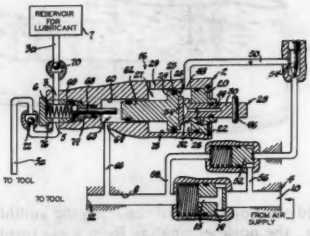
A stabilizer for supporting a ladder formed of a U-shaped frame of extruded tubing of diamond shaped cross section providing a flat clamping surface cocked at an angle to the plane of the frame and which is clamped to the upright members of a ladder so as to be automatically oriented in horizontal position to press at right angles against the wall of the building when the ladder is in its normal working position. Pivoted feet are provided at the ends of the frame held resiliently in a centered, wall engaging, position but capable of rocking movement for self alinement with angled wall surfaces. Each foot is fitted with a rubber pad surfaced to prevent slipping in any direction. The diamond cross section provides an adjacent clamping surface which is parallel to the plane of the frame for permitting the frame to be clamped parallel to the upright members of the ladder to provide lateral outboard support. The frame is fitted with a pair of parallel rods for slidable reception of a rectangular tray.

3,693,757

LUBRICATING APPARATUS

James J. Callahan, Mentor, and John Proctor Snow, Macedonia, both of Ohio, assignors to McCord Corporation

Filed Aug. 3, 1970, Ser. No. 60,411
Int. Cl. F16n 25/02
U.S. Cl. 184—7 D 22 Claims



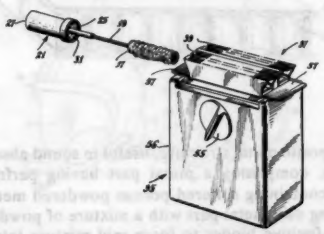
Lubricating apparatus for automatically providing a constant supply of lubricant to air operated tools during the operation of such tools, including an expansible and contractible pump chamber having an intake port for connection with a supply of lubricant and a delivery port for delivering lubricant from the pump chamber to the tool being lubricated. The apparatus includes a main air passage for connection with a source of air under pressure for driving the tool, and a normally closed control valve controls flow through the main air passage and is movable to an open position to permit flow through the air passage in response to a pressure drop between the upstream and downstream sides of the valve caused by starting the tool into operation. Means operable in response to air flow through the main passage causes the pump chamber to alternately expand and contract and pump lubricant to the working parts of the tool so long as the tool is in operation. The cycle of the pump can be selectively adjusted to increase or decrease the rate of flow of lubricant to the tool.

3,693,758

LUBRICATING DEVICE FOR ELECTRIC DRY SHAVER

John Robert Tierney, Milford, Conn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Nov. 23, 1970, Ser. No. 92,063
Int. Cl. F16n 15/00
U.S. Cl. 184—102 4 Claims



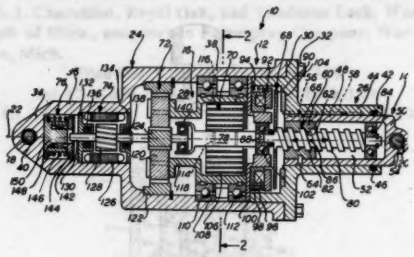
A lubricating device for depositing a lubricant onto the cutter teeth of a reciprocating inner cutter movable relative to a stationary outer cutter of an electric dry shaver, and which device includes a brush and container. The brush has bristles which are immersible within a gelled lubricant within an elongated container and the lubricant is carried by the bristles, whereby when the brush is inserted into the inner cutter the lubricant is caused to deposit on the cutter teeth. A cap constitutes the handle of the brush as well as serving to seal the container when the brush is stored therein.

3,693,759

THRUST ACTUATOR

Arnold Schindel, Fairlawn, N.J., assignor to Singer-General Precision, Inc., Little Falls, N.J.

Filed March 25, 1971, Ser. No. 127,914
Int. Cl. F03g 1/00
U.S. Cl. 185—40 R 10 Claims



An electromechanical thrust actuator including a cylinder having a cavity with a longitudinal axis, a piston received in the cavity for displacement relative to the cylinder along the axis, and electromechanical drive means disposed in the cavity and connecting to the cylinder and the piston for axially displacing the piston relative to the cylinder, wherein the electromechanical drive means includes a ring member disposed in the cavity and movable relative to said cylinder, a torsion spring disposed within the ring member, the torsion spring having an outer end portion connected to the ring member, and having an inner end portion connected to the piston, and a motor adapted to rotate the ring member in order to wind-up the torsion spring, and clutch means engaging the spring inner end and being adapted to suddenly release the spring for instantaneously displacing the piston relative to the cylinder along the axis.

3,693,760

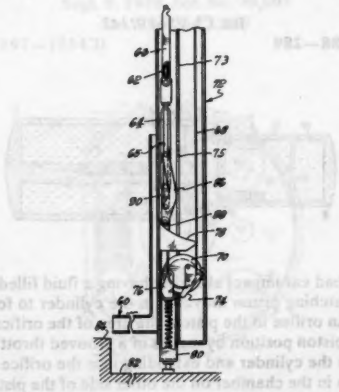
Patent Not Issued For This Number

3,693,761

ELEVATOR SYSTEM

Thomas F. Fitzgibbon, Madison, Ind., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Aug. 28, 1970, Ser. No. 67,817
Int. Cl. B66b 5/28
U.S. Cl. 187—67 4 Claims



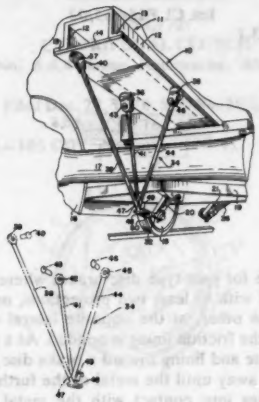
An elevator system is provided to operate between two levels which are capable of relative movement with respect to each other.

3,693,762

ANCHORING ROD BRACKET ASSEMBLY FOR RAILWAY CAR BRAKE RIGGING

Donald B. Yates, Park Forrest, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed June 21, 1971, Ser. No. 154,971
Int. Cl. B61h 13/38
U.S. Cl. 188—52 6 Claims



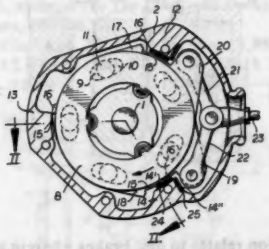
A foundation brake rigging for railway cars includes a connecting rod and an anchoring rod which are disposed beneath the axles of the wheels of a railway car truck. The connecting rod is connected to a fulcrum rod which actuates the connecting rod to apply the brakes. The anchoring rod is removably anchored on a bracket assembly of tripodal design which is removably connected to the center sill of the railway car.

3,693,763

SELF-ENERGIZING DISK BRAKE FOR AUTOMOTIVE VEHICLES

Hansherger Powilleit, Erkrath-Unterbach, Germany, assignor to International Harvester Company, Chicago, Ill.

Filed June 11, 1970, Ser. No. 45,454
Int. Cl. F16d 55/04
U.S. Cl. 188—71.4 3 Claims



A self-energizing disk brake having a pair of thrust plates positioned within a stationary housing and between brake disks connected to a shaft to be decelerated. An actuating means to rotate the plates relative to each other to cause spherical balls trapped in complementary indentations in the facing surfaces of the plates to push the plates apart against the bias of a spring means into frictional engagement with the brake disks. Centering cams and lugs on the plates are capable of selective engagement with guide surfaces and projections

formed on the housing. The cams and lugs are provided with yieldable vibration dampening elements having a low coefficient of friction to minimize the axially directed forces resisting separation of the plates.

3,693,764

SPOT-TYPE DISC BRAKE SHOE

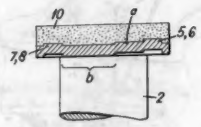
Hans Joachim Anders, Frankfurt am Main, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jan. 21, 1971, Ser. No. 108,649

Claims priority, application Germany, Feb. 21, 1970, P 20 08 057.3

Int. Cl. F16d 65/02

U.S. Cl. 188—73.1 **1 Claim**



A brake shoe for spot-type disc brakes wherein a backing plate is formed with at least two projections, one extending further than the other, at the opposite lateral edges of the plate to which the friction lining is bonded. As a piston drives the backing plate and lining toward a brake disc, the lining is gradually worn away until the metal of the further extending projection comes into contact with the metal of the disc, thereby providing an audible squeal or warning signal to the vehicle operator while there is still enough brake lining remaining to provide adequate stopping power.

3,693,765

DISC BRAKE AND SQUEAL PREVENTIVE MEANS THEREFOR

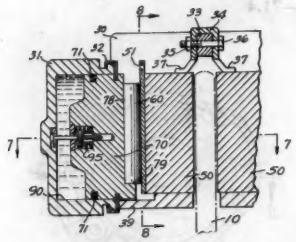
Ryotaro Hikida, and Takeo Ogasawara, both of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Uichi-ken, Japan

Filed May 1, 1970, Ser. No. 33,824

Claims priority, application Japan, May 8, 1969, 44/35857

Int. Cl. F16d 55/228

U.S. Cl. 188—73.5 **7 Claims**



The invention relates to disc brakes wherein antifriction intermediate members such as rollers, or balls, are provided between the friction pad and the piston reducing the contact area to lines or dots, thereby reducing the frictional force between opposed surfaces of the pad and the piston, to prevent brake squeal.

3,693,766

Patent Not Issued For This Number

3,693,767

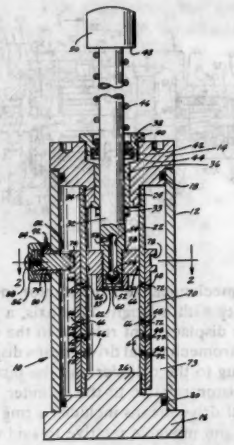
ADJUSTABLE HYDRAULIC SHOCK ABSORBER

Kermit B. Johnson, Jamestown, N.Y., assignor to Hydraulic Products Corporation, Jamestown, N.Y.

Filed Nov. 5, 1970, Ser. No. 87,224

Int. Cl. F16f 9/48

U.S. Cl. 188—285 **9 Claims**



A shock absorber comprising a housing, a cylinder mounted within the housing, and a metering sleeve surrounding the cylinder. The cylinder wall is provided with longitudinally spaced openings communicating with annular grooves formed in the exterior of the cylinder wall. The metering sleeve is provided with longitudinally spaced openings adapted to register with the grooves of the cylinder wall to form composite orifices for the egress of fluid from within the cylinder to an annular reservoir in the housing upon the application of a load to the piston rod. The metering sleeve is adjustably slidable relative to the cylinder to vary the effective size of the orifices. The annular grooves take various cross-sectional shapes to control the flow characteristics of the fluid through the orifices.

3,693,768

IMPACT ABSORBER FOR RAILROAD CARS

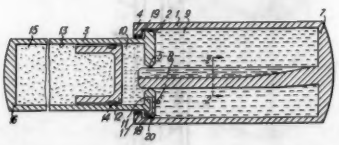
Hans Erdmann, Schonbornring, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Oct. 14, 1970, Ser. No. 80,546

Claims priority, application Germany, Oct. 29, 1969, P 19 54 331.8

Int. Cl. F16f 9/342

U.S. Cl. 188—289 **1 Claim**



A railroad car impact absorber having a fluid filled cylinder with a matching piston movable in the cylinder to force fluid through an orifice in the piston, the area of the orifice varying with the piston position by means of a grooved throttle rod attached to the cylinder and extending into the orifice. A floating piston in the chamber on the other side of the piston forms a gas return spring. The throttle rod causes a lower deceleration during the first part of the piston displacement than during the second part of the displacement.

3,693,769

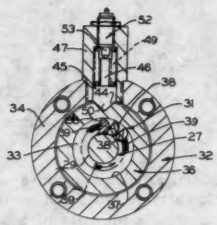
Patent Not Issued For This Number

3,693,770

ANTI-REVERSE CLUTCH SAFETY DEVICE

Loris J. Charchian, Royal Oak, and Thaddeus Lech, Warren, both of Mich., assignors to Formspray Company, Warren, Mich.

Filed Dec. 9, 1970, Ser. No. 96,359
Int. Cl. G08b *21/00*; F16d *41/07*; H01h *3/16*
U.S. Cl. 192—30 W **11 Claims**



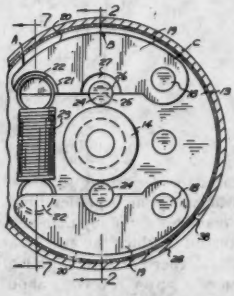
A conventional over-running clutch-type "no back" mechanism normally backstops or grounds out a drive shaft in the event of a load thereon tending to cause reverse wind-up at clutch elements of the mechanism; and the latter is equipped with a safety device which signals the presence of excessive wind up or slip condition. The device is applied coaxially to the mechanism's drive shaft, and includes a sprag assembly torqued reversely in response to such undue slip or wind-up. The assembly is interposed radially between an outer rotatable race, and a cylindrical stud providing an inner race, both races being coaxial with the shaft; and the stud is coupled to rotate with the latter in its driving phase, in which the stud over-runs relative to the outer race. When shaft backstopping is in effect the sprag assembly transmits that torque to the outer race; and in response the excessive wind-up or slip, as picked up by the sprag assembly, the latter causes the outer race to rotate a bit. This minor rotation enables a part of the outer race to cammingly close an electric limit switch, thus originating a signal to audibly or visibly alert an attendant.

3,693,771

CENTRIFUGAL CLUTCH

Warren H. De Lancey, Elyria, Ohio, assignor to Pioneer Products Company, Elyria, Ohio

Division of Ser. No. 761,931, Sept. 24, 1968. This application Sept. 8, 1970, Ser. No. 70,007
Int. Cl. F16d *23/10*
U.S. Cl. 192—105 CD **1 Claim**



A centrifugal clutch having drive and driven members, the former including a disc and hub, a pair of weights with arcuate outer surfaces pivotally mounted at their adjacent one ends upon said disc and constrained to radial movements, a spring interconnecting their adjacent other ends in tension maintaining the weights in a radial inward "release" position, the driven member including a drum overlying and spaced from the disc and weights, and having a hub journalled on the disc hub, and a sleeve of friction material mounted upon and around the interior of said drum normally spaced from the weights.

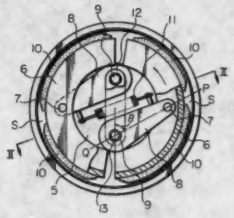
And a modified clutch wherein the weight pivots are diametrically opposed, and spring interconnect the respective opposite ends of the weights.

3,693,772

CENTRIFUGAL CLUTCH

Eiji Tani, No. 6,4,4-chome Hannancho, Abeno-ku, Osaka, Japan

Filed Dec. 29, 1970, Ser. No. 102,457
Int. Cl. F16d *43/24*
U.S. Cl. 192—105 CD **11 Claims**



A centrifugal clutch is provided for transmitting power smoothly and stably from a drive shaft to a follower drum by shoes contacting the inside surface of the drum via lever members pivotally fixed at one end to a shoe and at the other end to the drive shaft or to a base plate fixed to the shaft.

The pivots of the levers on the shoes are disposed on the leading portion of the shoes in the direction of rotation. The angle between a radius passing through the pivots on the shaft or the base plate and the axes of the lever connecting both pivots of the lever is arranged to be acute at all times.

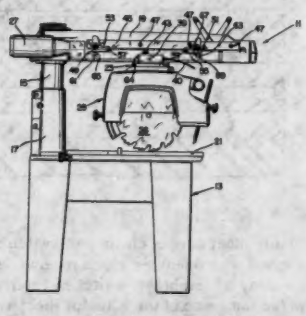
The above features in combination serve to prevent wear of all parts conventionally caused by a pendulum motion of the shoes during acceleration and deceleration and thus serve to extend the lift of the clutch.

3,693,773

CARRIAGE STOP FOR RADIAL ARM SAW

John L. Wickham, Glen Arm, and Erik J. De Witt, Lutherville, both of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed Aug. 21, 1970, Ser. No. 65,952
Int. Cl. F16d *71/00*; B23g *5/00*; H01h *21/28*
U.S. Cl. 192—142 R **15 Claims**



A radial arm saw including a base frame having an upstanding post supported thereon. An arm is pivoted to the post and

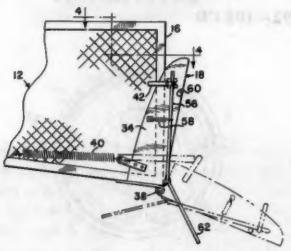
extends over a work table supported upon the base frame. A powered circular saw and saw carriage is suspended from the arm and is movable therealong to cut a workpiece on the table. The carriage is moved along the arm by motor means which is automatically reversed or turned off by switch means on the carriage engageable with actuator means on the arm. The actuator means is incrementally adjustable along the arm and includes positive stop means for the carriage should the switch means fail to operate.

3,693,774

MATERIAL UNLOADING SYSTEM

Harold G. Meitl, Clarendon Hills, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Jan. 22, 1971, Ser. No. 108,835
Int. Cl. B65g *11/12*
U.S. Cl. 193—17 2 Claims



A collection bin on a mobile fruit harvester wherein a chute is pivotally mounted on the bin to close a discharge opening when the chute is in an upright position. A latch releasably holds the chute in the closed position. An actuator assembly is mounted on the chute in operative connection with the latch and includes a panel projecting beneath the chute so as to be engageable by a receiving bucket mounted on a vehicle. As the bucket is moved into engagement with the panel, the latch is released and the chute is pivoted to a downwardly inclined position for emptying the contents of the bin into the bucket

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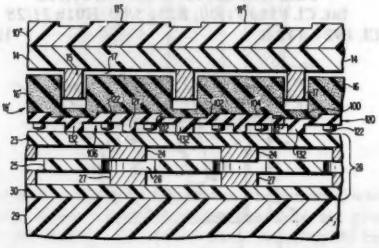
3,693,775

ACTUATOR FOR ELASTIC DIAPHRAGM SWITCH KEYBOARD

Kenneth A. Brooks, Cary; Lawrence L. Johnson, and James A. Mathewson, both of Raleigh, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1970, Ser. No. 51,284
Int. Cl. B41j *5/08*
U.S. Cl. 197—98 6 Claims



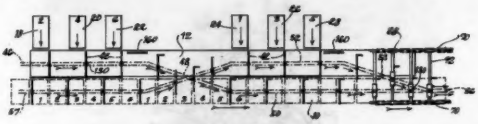
An actuator sheet carries clusters of switch actuating projections aligned with openings which receive deflectable contacts of an array of diaphragm switches. Intersecting ribs are carried on the same side of the actuator sheet as the switch actuating projections, to define isolation zones for the projections corresponding directly to the individual key areas of the keyboard. Integral, raised pressure pads for each key area are formed on the upper surface of the actuator sheet to enhance even pressure distribution over the pertinent switch contact area.

3,693,776

PUSHER LOADING MEANS FOR CONVEYORS

John Harrison, Lincolnwood, Ill., assignor to The Spra-Con Company, Chicago, Ill.

Filed Sept. 30, 1971, Ser. No. 185,311
Int. Cl. B65g *19/10, 47/04*
U.S. Cl. 198—23 10 Claims



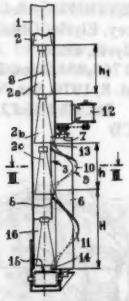
A system for loading articles on a conveyor which includes a plurality of article carrying areas and having a loading platform positioned alongside the path of conveyor movement. The system includes pusher means which are mounted on a separate conveyor and which engage articles positioned on the platform. The pusher means are guided by track means so that the articles move longitudinally in the direction of conveyor movement and transversely toward the conveyor so that the articles can be deposited on the conveyor in an extremely smooth but rapid fashion. The pusher means include automatically operated and pivotally mounted end paddles which corner articles engaged by the pusher means to insure transfer movement over the platform and toward the conveyor.

3,693,777

APPARATUS FOR LAYING DOWN ARTICLES ON A CONVEYOR

Marcel Beauchemin, Le Havre, France, assignor to Sidel, Societe Anonyme, Le Havre, France

Filed June 7, 1971, Ser. No. 150,662
Claims priority, application France, July 29, 1970, 7027975
Int. Cl. B65g *47/26, 59/06*
U.S. Cl. 198—26 3 Claims



This apparatus for depositing separately on a conveyor a plurality of articles having a predetermined and same height and a greater diameter at the top than at the base, comprises a descending conduit in which the articles are stacked; this conduit has a lateral aperture through which projects only the thread portion of a screw revolving about an axis parallel to the conduit, the pitch of said screw increasing in the downward direction from a value inferior to the predetermined height of said articles to a value greater than said height.

3,693,778

ASSEMBLY FOR USE WITH CONVEYOR SYSTEM FOR SEPARATING AND DIVERTING OBJECTS

Frank J. Halm, III, South Windsor, Conn., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.

Filed Dec. 30, 1970, Ser. No. 102,872
Int. Cl. B65g 47/22
U.S. Cl. 198—29 5 Claims

A guiding frame assembly is provided with a series of gates for receiving and diverting individual objects moving along a conveyor system. The frame assembly is constructed to be mounted over existing conveyor equipment without modification of the conveyor equipment, and the series of gates are progressively staggered from an upstream area to a downstream area of the conveyor system so as to intercept and receive objects from a desired width of the conveyor system. The gates are of special design to handle a variety of shapes and sizes of objects.

3,693,779

ROLL FOR DISPLACEMENT OF BAR-LIKE PRODUCTS

Georges L. P. Tavernier, and Robert L. Dubois, both of Maubeuge, France, assignors to Usinor

Continuation-in-part of Ser. No. 793,081, Jan. 22, 1969, Pat. No. 3,610,402. This application July 22, 1971, Ser. No. 165,242
Claims priority, application France, Jan. 22, 1968, 68136931
Int. Cl. B65g 17/46
U.S. Cl. 198—41 9 Claims

A roll for transporting elongated ferro-magnetic bar-like products, includes a series of axially aligned magnetizing coils, and a magnetic circuit around each coil. Each magnetic circuit comprises an annular magnetic core within the coil, magnetic elements extending from the core on each side of the coil, and ring means surrounding the coil. The ring means includes a non-magnetic portion of less width than that of the magnetic portion. The coils are supplied with direct current, and the roll is mounted on a non-magnetic shaft.

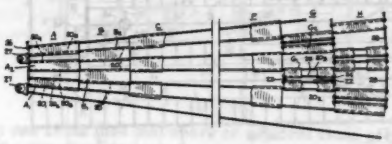
3,693,780

LATERAL-BEND ENDLESS CHAIN BELT CONVEYOR ASSEMBLY

Joseph Fraioli, Sr., 300 Martine Ave., White Plains, N.Y.

Filed June 29, 1971, Ser. No. 157,992
Int. Cl. B65g 15/00
U.S. Cl. 198—182 8 Claims

An endless chain belt conveyor assembly for transporting articles along an arcuate path. The assembly includes a trackway defined by concentrically-arranged curved inner and outer rails. Operating within the rails is an endless belt supported between a driven roll and an idler roll, the belt being constituted by a continuous train of inter-linked cross rods, the rods diverging one degree from each other so that the spacing between adjoining rods increases progressively from the inner rail ends of the rods to the outer rail ends thereof. Pivotally connected to the cross rods are several curved rows of slat-like links, the rows being concentrically arranged between the inner and outer rails to create a supporting surface extending across the rods. The first row of links, which



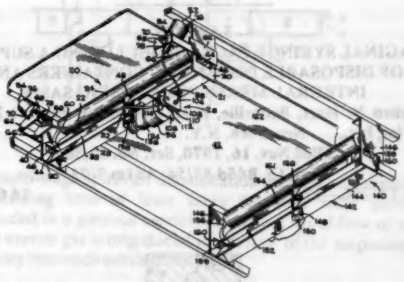
lies adjacent the inner rail, is formed by links each bridging a respective pair of rods and having a tapered width to match the spacing between the rods joined thereby. The succeeding rows of links which extend toward the outer rail, are formed by links that are staggered with respect to those in the preceding row and are pivotally joined to alternate pairs of rods, the links in the succeeding rows having a tapered width to match the spacing between the rods joined thereby.

3,693,781

TRAINING APPARATUS FOR DRIVEN BELTS

Ronald F. Homeier, Plainfield, Ind., assignor to FMC Corporation, San Jose, Calif.

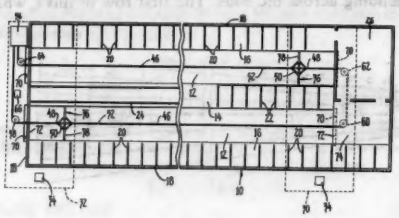
Filed Feb. 8, 1971, Ser. No. 113,535
Int. Cl. B65g 15/62
U.S. Cl. 198—202 12 Claims



An apparatus for training the carrying or return run of a conveyor belt supported on a plurality of spaced idler roller assemblies, includes a pair of rotatably mounted actuating rolls disposed adjacent the edges of the belt in a position to be contacted by the belt when the belt becomes off-centered. One end of a flexible shaft is operatively connected to each actuating roll to turn in unison therewith while the other end of the flexible shaft is operatively connected to the input shaft of a planetary gear reducing unit. The output shaft from the reducing unit is connected through bevel gears to a pivoting vertical shaft upon which an idler roller supporting frame is mounted. Pivotal movement of the supporting frame angularly displaces a belt supporting idler roller mounted thereon to urge the belt toward a centered position between the actuating rolls where it is out of contact with either roll.

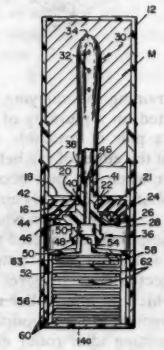
In an alternative embodiment the actuating rolls upon a predetermined pivotal movement, contact limit switches to actuate a reversible electric motor that drives the planetary gear reducing unit. The reducing unit is linked to an idler roller supporting frame just as in the first embodiment to pivot the idler roller about a vertical axis. Over-travel limit switches are also provided to shut the motor off in the event the supporting frame is pivoted to its pivotal limit.

3,693,782
LIVESTOCK CONFINEMENT AREA
Edward R. Thoennes, Parkers Prairie, Minn.
Filed June 22, 1970, Ser. No. 48,394
Int. Cl. B65g *25/08*
U.S. Cl. 198—224 **7 Claims**



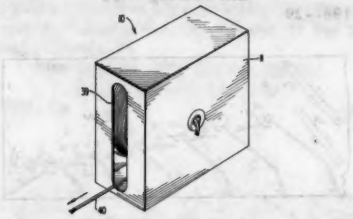
A mechanized self-cleaning livestock confinement area including a pair of spaced longitudinally extending livestock areas and a depressed flat alley extending between the livestock areas. An opening is provided at each end of the alley to form a manure drop. A scraper extends across the width of the alley between the livestock areas. The scraper includes a guide member which is perpendicular to the scraper blade and runs in a groove in the bottom of the alley. A continuous chain runs in the groove and is attached to the guide member. The chain is driven to reciprocate the scraper back and forth to first scrape manure into the manure drop at one end of the alley and then into the manure drop at the other end of the alley. The scraper can be reciprocated back and forth continuously or a control circuit with a timer can be provided to energize the scraper drive motor at predetermined times.

3,693,783
VAGINAL SYRINGE PACKAGE INCLUDING A SUPPLY OF DISPOSABLE DISPENSING CONTAINERS AND INTEGRAL MEANS FOR STORING SAME
Stephen N. Hart, Belleville, N.J., assignor to Fancort Industries, Inc., New York, N.Y.
Filed Nov. 16, 1970, Ser. No. 89,864
Int. Cl. B65d *85/54*; **A61m** *7/02*
U.S. Cl. 206—17.5 **14 Claims**



A two part housing that is small enough to be carried in a woman's handbag contains a plurality of compactly folded, disposable, concentrated-medicament-containing, thin-walled, flexible, limp plastic bags. The housing also contains a hollow elongated bone having a plurality of orifices at the distal end thereof. The concentrated medicament can dissolve or disperse in water. The housing further contains a viscous germicidal mass in which the bone is stored when not in use.

3,693,784
WIRE PACKAGE
William T. Holmes, 219 Spring St., Carrollton, Ga.
Filed Jan. 8, 1971, Ser. No. 104,904
Int. Cl. B65d *83/00, 85/04*
U.S. Cl. 206—52 W **9 Claims**



A package for cable or the like wherein a reel wound with insulated multiple conductor cable is enclosed in a container. The container includes recesses in its sidewalls which receive the end flanges of the reel and circular openings in its sidewalls which receive end protrusions or bosses of the reel spindle. The inner end of the cable on the reel is inserted through a passageway in the spindle which opens through the end of the spindle so that both the inner and outer ends of the cable are accessible for electrically testing the conductors. The wire can be pulled from the container and the reel will rotate inside the container to pay out the wire.

3,693,785
FRANGIBLE PACKAGE
Joseph T. Sincavage, Knowtonwood, Pa.; Carl R. Pepmeier, Fredericksburg, Va., and Louis E. Stoffregen, Springfield, Pa., assignors to FMC Corporation, Philadelphia, Pa.
Division of Ser. No. 714,281, March 19, 1968, Pat. No. 3,577,258. This application June 1, 1970, Ser. No. 54,053
Int. Cl. B65d *75/58, 85/72, 65/26*
U.S. Cl. 206—56 AA **3 Claims**

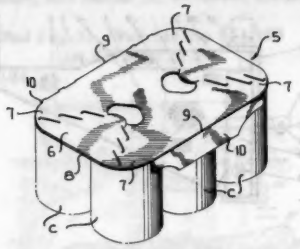
A package within which is encased a moisture-containing product encased within a wrapping material formed of a non-fibrous, hydrophilic regenerated cellulose sheet having a coating of moistureproof material on at least one side thereof, with the coated side having a selected area of lower moistureproof properties than the remainder thereof whereby the portion of the regenerated cellulose sheet adjacent to such selected area of a coated side is more receptive to moisture and thus more frangible and easily ruptured, as by bending of the package.

3,693,786
Patent Not Issued For This Number

3,693,787
COVER OF CONTAINER PACKAGE
Joseph W. Duerr, Flushing, N.Y., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Nov. 6, 1970, Ser. No. 87,374
Int. Cl. B65d *85/62*
U.S. Cl. 206—65 C **5 Claims**

This disclosure relates to a cover for a group of containers adapted to be formed into a package by wrapping sheet

material thereabout. The cover is formed of paperboard having grain with the cover being naturally warpable about the grain axis. The cover further has flaps connected to opposite



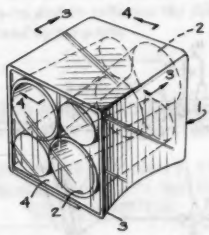
sides thereof and extending normal to the grain axis with the flaps being foldable out of the plane of the cover to provide the cover with beam strength sufficient to overcome warping of the cover.

3,693,788

SLEEVE PACKAGE

Richard K. Oglesbee, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Filed Dec. 16, 1970, Ser. No. 98,823
Int. Cl. B65d *75/38, 65/16*
U.S. Cl. 206—65 S **3 Claims**



An improved package is described to pack and distribute articles such as glass tumblers or a variety of other articles having an inner paperboard sleeve and an outer envelope such as a shrink film envelope. The sleeve is formed by cutting and scoring flat paperboard forming a foldable wrap-around sleeve to initially group and contain the packaged articles. The improved sleeve has one or more curved flexible article gripping panels formed by the use of curved score lines the sleeve blank. The sleeve with the gripping panel is wrapped around the articles or may be pre-formed and loaded with the articles. After application, the sleeve grips the articles providing a stable package as an outerwrapper is slipped over the filled sleeve and is shrunk or otherwise drawn tightly against the articles and the sleeve.

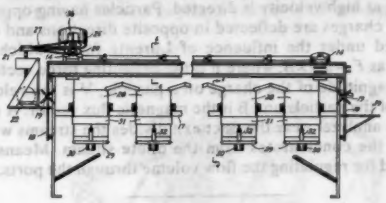
3,693,789

PRAWN SORTING MACHINE

George Powell, Fremantle, Australia, assignor to E. M. S. Holdings Pty. Ltd., Western Australia, Australia

Continuation-in-part of Ser. No. 815,427, April 11, 1969, abandoned. This application Oct. 20, 1970, Ser. No. 82,263
Int. Cl. B07b *13/04*
U.S. Cl. 209—73 **6 Claims**

A prawn sorting machine having a pair of conveyor members mounted adjacent each other so as to carry prawns therebetween, the conveyor members having a diverging opening therebetween in the direction of travel thereof, to allow prawns carried between the conveyor members to fall therefrom onto adjoining chutes located below the opening, the angle of divergence of the opening being greater above



any one chute than that above an adjacent chute preceding it in the direction of travel.

3,693,790

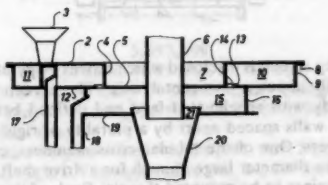
Patent Not Issued For This Number

3,693,791

METHOD OF, AND APPARATUS FOR, SPIRAL AIR CLASSIFICATION OF SOLID PARTICLES IN A GASEOUS CARRIER

Erich Beck, Worms-Weinsheim, Germany, assignor to Ingenieurbureau Dr. Brehm AG, Zurich, Switzerland

Filed Feb. 6, 1970, Ser. No. 9,270
Int. Cl. B04c *1/00*
U.S. Cl. 209—144 **13 Claims**



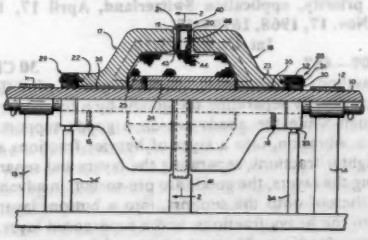
A multi-stage spiral air classification method and apparatus for dividing into at least three fractions solid particles suspended in a gaseous carrier, in which a spiral flow of additional carrier gas is introduced to the flow of the suspension at the entry into each subsequent stage.

3,693,792

ELECTRODYNAMIC PARTICLE SEPARATOR

James I. Lang, Oneida, Wis., assignor to John F. Sylvester, Green Bay, Wis.

Filed May 5, 1971, Ser. No. 140,443
Int. Cl. B03c *1/12;* **B01d** *35/06*
U.S. Cl. 209—212 **20 Claims**



Charged particles such as ions in solution or suspended solids having a natural or induced electric charge are

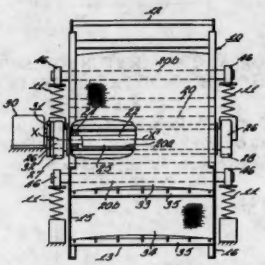
separated from or concentrated in the fluid medium in which they are contained. The fluid medium is conducted through a non-magnetic duct through which an intense magnetic flux rotating at high velocity is directed. Particles having opposite polarity charges are deflected in opposite directions and concentrated under the influence of Lorentz forces which are defined as $F = q\ V \times B$, where F is the deflecting force vector, q is the magnitude of the charge on a particle, V is the velocity vector of the particle and B is the magnetic flux vector. A multiported analyzer near the duct exit divides the streams which contain the concentrates from the dilute stream. Means are provided for regulating the flow volume through the ports.

3,693,793

UNIT BODY VIBRATING SCREEN

Mathew P. Hahn, Wauwatosa, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Aug. 28, 1970, Ser. No. 67,831
Int. Cl. B07b 1/36
U.S. Cl. 209—326 **3 Claims**



A vibrating screen is disclosed which moves by gyrating in a circular path about a horizontal axis. The screen has an inclined body with an elevated feed end defined between a pair of side walls spaced apart by a plurality of rigid tubular cross members. One of the tubular cross members, centrally located, has a diameter large enough for a drive shaft and associated bearings to be mounted therein. Each of the tubular cross members projects on each end into an aperture cut in the adjacent side wall where each is joined to the adjacent side wall by a weld around the entire circumference thereof to provide an integral unitary assembly of light weight, great strength, high natural frequency and with the weld path joining the cross members to the side walls having a configuration which is the same, i.e., circular, as the path of motion of the screen in vertical planes defined by the weld paths.

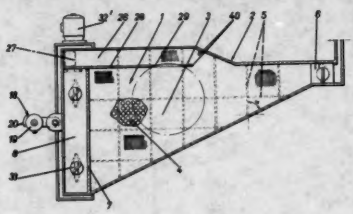
3,693,794

METHOD AND APPARATUS FOR SEPARATING GRANULAR GOODS

Hans Oetiker, Gallen, Switzerland, assignor to Gebruder Buhler AG, Gallen, Switzerland

Filed April 17, 1969, Ser. No. 817,127
Claims priority, application Switzerland, April 17, 1968, 5678/68; Nov. 17, 1968, 16799/68
Int. Cl. B07b 3/10
U.S. Cl. 209—467 **30 Claims**

In a method of separating granular goods of different specific gravity, by separating the goods, by a forced air flow therethrough while the goods are on a goods support subjected to a vibration, into a layer of heavier fractions and a layer of lighter fractions, separating the layers and separately discharging the layers, the goods are pre-sorted, in advance of charging thereof onto the support, into a bottom layer, enriched with the heavy fractions, and a superposed layer, free of the heavy fractions. The two layers, while in such superposed relation, are then charged onto the goods support. The apparatus includes a goods feeding device, for pre-sorting of the goods, in the form of a vibrating duct having a gas permeable bottom wall. The duct forms an initial sedimentation path of the heavy fraction of the goods, and the discharge end of



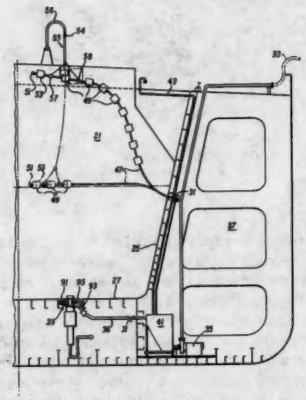
the duct is spaced from the outlet for the heavy fraction to form a succeeding sedimentation path of the heavy fraction charged onto the goods support.

3,693,795

METHOD AND APPARATUS FOR LOADING SLURRIES INTO VESSELS AND ELIMINATING THE SUSPENDING LIQUID

Charles W. Robinson, San Francisco; Kenneth E. Merklin, Tiburon, and Francis D. Finlayson, Orinda, all of Calif., assignors to Marcona Corporation, San Francisco, Calif.

Filed May 22, 1970, Ser. No. 39,667
Int. Cl. B01d 21/24
U.S. Cl. 210—83 **17 Claims**



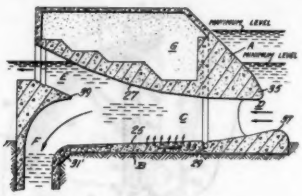
Method and apparatus for loading the holds of vessels with discrete ore or mineral solids characterized by a high settling rate in which the solids are introduced into the hold as a slurry to partially load the same. The slurry is then allowed to settle by gravity under quiescent conditions to form a settled zone of solids in the lower region of the hold above which are settling zones and an essentially clear layer of supernatant liquid. The supernatant liquid is withdrawn after which additional slurry is introduced into the hold to substantially fill the same. Again, the contents of the hold are allowed to settle to form a deeper zone of settled and settling solids with an overlying layer of supernatant liquid which is again withdrawn. Apparatus is disclosed for withdrawing the supernatant liquid and includes discharge conduit having an inlet head and flotation collar adapted to be submerged in and to float beneath the surface of the liquid so that the same can be withdrawn through the conduit either by gravity or by pumping action.

3,693,796

METHOD AND APPARATUS FOR REMOVAL OF PARTICLES FROM SUSPENSION

Bernard Michel, 793 Des Vignes St., St. Foy, Quebec, and J. Allison Delaney, 625 Milton St., Montreal, Quebec, both of Canada

Filed Aug. 21, 1969, Ser. No. 851,963
Int. Cl. B01d 21/00
U.S. Cl. 210—84 13 Claims



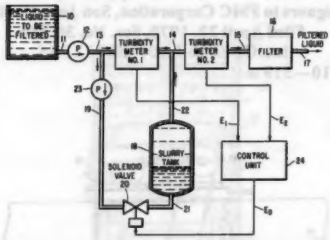
Method and apparatus comprising an intake of bridge pier like concrete construction for water-works located in a flowing stream of water. The intake has a passage leading from a submerged inlet upstream to upper and lower downstream outlets. The passage widens in a vertical plane from the inlet towards the outlets and has a shape to cause the overall velocity of the stream to be slowed and the upper part to move faster than the lower part thereby to entrain frazil ice or other particulate material entering the passage and to carry it through the upper outlet while water free from such material passes through the lower outlet. Means is provided for injecting air near the inlet to form a curtain of air bubbles to further slow down the stream and to enhance the differential velocity between its lower and upper parts.

3,693,797

APPARATUS FOR ADDING MATERIAL TO LIQUIDS

George J. Topol, 65 Charleston Ave., Hamilton, Ontario, Canada

Continuation of Ser. No. 636,530, May 5, 1967, abandoned. This application May 8, 1970, Ser. No. 33,179
Int. Cl. B01d 37/02
U.S. Cl. 210—96 2 Claims



The turbidity of a liquid is measured before and after material has been added. The relative values of the measured turbidities are used to control the addition of the material so that the amount of material is added in any desired quantity or ratio relative to the liquid.

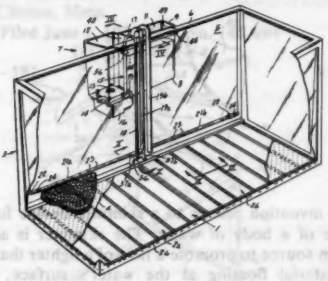
3,693,798

AQUARIUM FILTER DEVICE

Eugene B. White, Oak Park, Ill., assignor to Ken-Flo Products Corporation, Palos Heights, Ill.

Filed Dec. 1, 1969, Ser. No. 881,110
Int. Cl. E04h 3/20
U.S. Cl. 210—169 9 Claims

A method and system for the treatment of water in aquariums and the like utilizing aerobic action in which the water is withdrawn from the main body, exposed to the atmosphere, filtered and returned under pressure to the main body from below the same, the preferred embodiment of apparatus comprising a filter structure disposed exteriorly of the aquarium



water and supplied therefrom, with the filtered water being conducted to means disposed at the bottom of the aquarium constructed to support a layer of gravel or other discrete material thereon for dischare below such layer of discrete material, flowing therethrough under pressure.

3,693,799

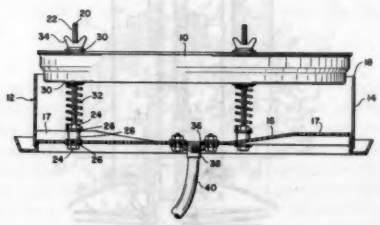
Patent Not Issued For This Number

3,693,800

FLOATING SURFACE SKIMMER

Howard E. Stanfield; Gary W. Stanfield, and George F. Camp, all of Tulsa, Okla., assignors to Acme Products Incorporated, Tulsa, Okla.

Continuation-in-part of Ser. No. 880,594, Nov. 28, 1969, Pat. No. 3,598,501. This application Dec. 14, 1970, Ser. No. 97,875The portion of the term of this patent subsequent to Aug. 10, 1988, has been disclaimed.
Int. Cl. E04h 3/20
U.S. Cl. 210—242 4 Claims



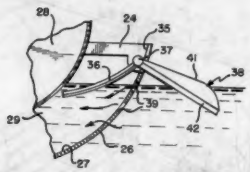
A floating surface skimmer having a hollow bowl and a disc-shaped float member for supporting the bowl slightly below the surface of a liquid; the bowl has a substantially closed bottom and a substantially continuous vertical side portion, the upper edge of which forms a substantially continuous horizontal side edge constituting a weir; adjustment means are provided to adjust the position of the bowl vertically with respect to the float member which, in turn, creates the adjustment of the weir relative to the surface of the liquid; the skimmer is provided with an exhaust means which communicates, at one end, with the interior of the bowl and at its other end with a source of suction.

3,693,801

WATER SURFACE SKIMMER WITH CHECK VALVE

Ivo C. Pogonowski, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed June 25, 1971, Ser. No. 156,739
Int. Cl. C02b 9/02
U.S. Cl. 210—242 10 Claims



The invention relates to a skimmer device for use on the surface of a body of water. The skimmer is actuated by a vacuum source to promote a flow of a lighter than water coating material floating at the water's surface, through the skimmer by way of a submerged inlet. Valve means provided in the skimmer is so positioned to assure unidirectional flow through the skimmer to maintain the integrity of the vacuum source even though the skimmer be inadvertently raised from the water such that air would otherwise enter the vacuum system, and cause fluids to drain.

3,693,802

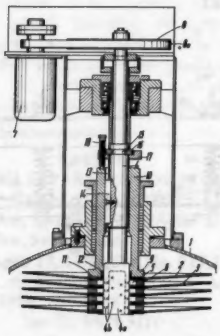
Patent Not Issued For This Number

3,693,803

FILTER DEVICE

Bruno Guazzone, Rapperswil, Germany, assignor to Dr. Ing. Hans Muller Chemie-Apparatebau, Zurich, Switzerland

Filed Nov. 23, 1970, Ser. No. 92,083
Claims priority, application Switzerland, Dec. 1, 1969, 489263/69
Int. Cl. B01d 33/06
U.S. Cl. 210—330 9 Claims



A housing has a peripheral wall provided with an opening in which a shaft is rotatably journalled with an end portion thereof extending through the opening to the exterior of the housing. Disc-shaped filter elements are mounted in axial succession on the shaft for rotation therewith. A sleeve surrounds the end portion of the shaft extending into the interior of the housing where it abuts against a terminal one of the filter elements. The sleeve is slidable axially of the shaft and a pressure-exerting arrangement is provided exteriorly of the housing for exerting pressure on the sleeve in a sense displacing it deeper into the housing and thereby exerting pressure upon and squeezing the filter elements on the shaft.

3,693,804

PRESSURE DIFFERENTIAL FILTERING APPARATUS AND METHOD

Douglas U. Grover, 2910 Jerome Road, Fulton, Ga.

Continuation-in-part of Ser. No. 865,588, Oct. 13, 1969, abandoned. This application April 29, 1971, Ser. No. 138,571
Int. Cl. B01d 33/00
U.S. Cl. 210—359 9 Claims

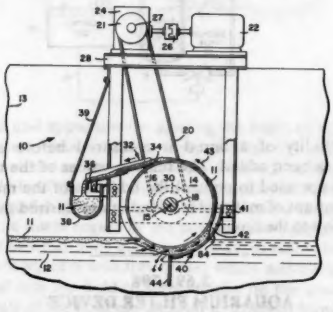
Pressure differential sampling and filtering apparatus and method of use. The apparatus includes a tubular sampling member open at both ends, one end having a resilient piston with a flexible lip which engages and wipes the inside surface of a test tube during insertion and withdrawal. The piston has an open bore containing a filter which has a porous structure with open cells forming a plurality of fluid flow channels. Filtrate emanating from the filter flow channels enters directly into the interior of the sampling member, thereby minimizing plugging.

3,693,805

SHROUDED DRUM SKIMMER

Thomas J. Tillett, Ambler, and Barry Straus, Lansdale, both of Pa., assignors to FMC Corporation, San Jose, Calif.

Filed April 22, 1970, Ser. No. 30,734
Int. Cl. E02b 15/04; B01d 21/18
U.S. Cl. 210—519 2 Claims



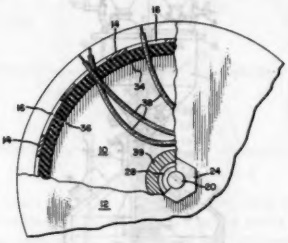
A drum-type skimmer for separating a surface layer of material from a body of liquid comprising a rotating drum disposed for partial submersion within the liquid and a shroud with a depending baffle positioned radially from and adjacent to the lower portion of the drum to improve the skimming action between the drum and the material to be skimmed.

3,693,806

ROTATABLE DISPENSER FOR PRECUT LENGTHS OF WIRE

Harry B. Lit, Peabody, and James H. Hosker, Danvers, both of Mass., assignors to General Electric Company

Filed Feb. 25, 1970, Ser. No. 14,037
Int. Cl. A47f 7/00, 13/04
U.S. Cl. 211—70 5 Claims



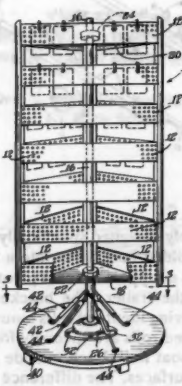
A rotatable dispenser for lengths of wire used in the manufacture of electronic or electrical equipment. The dispenser includes a holder comprising a pair of discs spaced apart by a perpendicular circumferential wall preferably either integral with or permanently secured to one of the discs. When the other of the discs is set aside, precut lengths of wire may be loaded in bundles into the cavity defined by the first disc and the circumferential wall. Each bundle is loaded with one end of each of its wires protruding through a dispensing opening formed in the circumferential wall. With the second disc in place, the holder is rotatably mounted on a work bench mount or a floor mount adjacent a work bench. Each dispensing opening in the circumferential wall would preferably be labeled with the type and length of wire so that a worker could easily select each individual wire as he needs it.

3,693,807

DISPLAY STAND

Charles O. Larson, Sterling, Ill., assignor to Chas. O. Larson Co., Sterling, Ill.

Filed Dec. 28, 1970, Ser. No. 101,491
Int. Cl. A47f 5/02, 5/04
U.S. Cl. 211—163 4 Claims



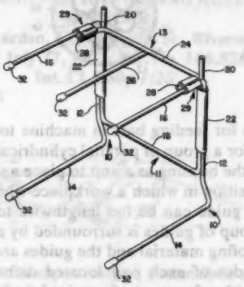
The present invention relates generally to improvements in stands for displaying articles for sale and more particularly to improvements in article display stands of the rotary type. Embodiments of the invention disclosed herein contemplate a horizontal display stand base and a novel post accommodating means associated therewith. Vertically disposed post means is fixed at its lower extremity to and extends upwardly from said accommodating means. An article display device is positioned above the base and is rotatable about the vertical axis of the post means, said device including a frame and a plurality of vertically spaced article display racks or panels supported by the frame.

3,693,808

DISPLAY RACK

David Rauch, Worcester, Mass., assignor to Van Brode Milling Co., Inc., Clinton, Mass.

Filed June 1, 1971, Ser. No. 148,694
Int. Cl. A47f 5/14
U.S. Cl. 211—181 4 Claims



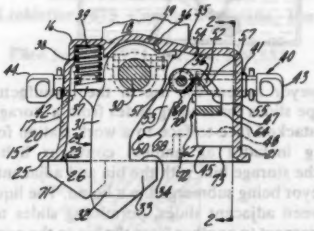
A collapsible knock-down wire display rack including a base supporting member and a removable T-shaped member, the base member being formed of three U-shaped members pivoted together to be positioned in horizontal supporting position and collapsed position, the T-shaped member being removably slidable on a portion of the base member; the upper horizontal legs of the base member and the base portion of the T-shaped member being adapted to support packages of merchandise.

3,693,809

RAILWAY CAR COUPLER

William J. Metzger, East Cleveland, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Dec. 14, 1970, Ser. No. 97,506
Int. Cl. B61g 3/10
U.S. Cl. 213—100 R 15 Claims



An automatic hook-type railway car coupler having a spring biased coupling hook mounted in its head for horizontal pivotal movement and adapted for interlocking engagement with the hook of an opposed similar coupler when the couplers are in a coupled position. The coupler is of the rotary bottom operated type having an uncoupling rod connected to each end of the coupler rotor member for actuation of the locking mechanism from either side of the coupler. More particularly, the coupler includes lock-set mechanism for maintaining the opposed hook of a mated coupled coupler in an uncoupled position in preparation for coupler separation.

3,693,810

APPARATUS FOR FEEDING BARS OR THE LIKE IN MACHINE TOOLS

Gunther Gumhold, Esslingen/Neckar, Germany, assignor to Index-Werke KG Hahn & Tessky, Esslingen/Neckar, Germany

Filed Jan. 20, 1971, Ser. No. 108,101
Int. Cl. B65h 5/16
U.S. Cl. 214—1.5 **8 Claims**

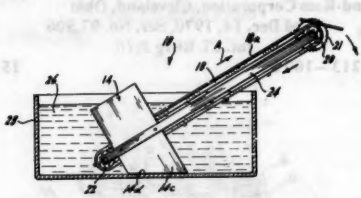
Apparatus for feeding bars in machine tools has a cylindrical housing for a group of parallel cylindrical guides which are rotatable in the housing as a unit to place a selected guide into a feeding position in which a workpiece which is inserted into the selected guide can be fed lengthwise to enter a machine tool. The group of guides is surrounded by a jacket consisting of soundproofing material and the guides are disposed in pairs with the guides of each pair located diametrically opposite each other with reference to the axis of the housing and having different internal diameters. The advancing mechanism for moving a bar in the selected guide lengthwise has a pusher which is introduced into the selected guide behind an inserted bar and is urged forwardly by a cable which is connected to a weight.

3,693,811

SLIDE CONVEYOR SYSTEM AND METHOD

James C. White, Rutherford, N.J., assignor to Propper Manufacturing Co., Inc.

Filed Dec. 1, 1970, Ser. No. 94,092
Int. Cl. B65g 59/06
U.S. Cl. 214—8.5 G **5 Claims**



A conveyor system for use in the manufacture of glass microscope slides for feeding slides from a storage bin where they are stacked face-to-face to a work station for individual processing includes an endless conveyor belt positioned beneath the storage bin, with the bin and adjacent portions of the conveyor being submerged in a liquid. The liquid creates a film between adjacent slides, permitting slides to slip easily one with respect to another from the bin to the conveyor.

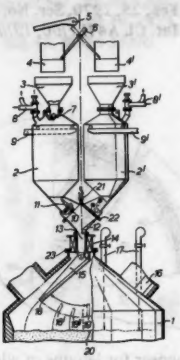
3,693,812

FURNACE CHARGING APPARATUS

Rene N. Mahr, and Edouard Legille, both of Luxembourg, Grand Ducy of Luxembourg, assignors to S. A. Des Anciens Etablissements Paul Wurth, Luxembourg, Grand Ducy of Luxembourg

Filed July 28, 1970, Ser. No. 58,816
Claims priority, application Luxembourg, July 31, 1969, 59.207
Int. Cl. F27b 1/12
U.S. Cl. 214—35 R **22 Claims**

A furnace charging apparatus which includes an adjustable chute for distributing the load of charging materials evenly within the furnace. The load of charging materials passes through a plurality of translatable sluices connected above the furnace inlet. The charging load falls through the sluices to a chute which is rotatable and angularly adjustable to distribute the load evenly through the furnace.

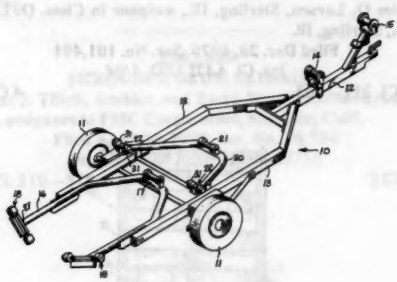


3,693,813

ROLLER ASSEMBLY FOR BOAT TRAILER

Oscar C. Calkins, Spokane, Wash., assignor to Calkins Manufacturing Company, Spokane, Wash.

Filed Jan. 25, 1971, Ser. No. 109,325
Int. Cl. B60p 3/10
U.S. Cl. 214—84 **6 Claims**



A roller assembly designed specifically to assist in the loading of straked, molded boat hulls onto a trailer. The roller assembly comprises a support bracket pivotable about a longitudinal axis along the trailer. The bracket supports a straight transverse axle having identical rolls mounted at opposite ends thereof. The spaced rolls are specially formed to accomodate the strakes of a boat hull. Each include a cylindrical portion and conical end surfaces. The difference in diameter between the rollers and the intermediate axle is greater than the protrusion of the strake on the hulls engaged by the rolls.

3,693,814

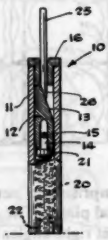
Patent Not Issued For This Number

3,693,815

METHOD FOR ORIENTING A ROD OR TUBE HAVING A BEVELED END

Wilbert William Redmer, Boca Raton, Fla., assignor to Redmer Sons Co., Franklin Park, Ill.

Division of Ser. No. 49,482, June 24, 1970, Pat. No. 3,631,990.
This application Dec. 28, 1971, Ser. No. 217,694
Int. Cl. B65g *47/24*
U.S. Cl. 214—152 1 Claim



Disclosed is a method for orienting a rod or tube having a beveled end. An example is the needle in an intravenous needle assembly which includes a grip for manipulation of the assembly during venipuncture. Basically, the apparatus comprises a tubular orienting cartridge including a beveled insert within the cartridge. A needle is inserted into the cartridge from a hopper and feeding device. After the needle is inserted in a horizontal position the tubular cartridge is rotated into an upright position and gently vibrated in order to align the beveled needle point on the corresponding beveled surface of the insert within the cartridge to thereby orient it. The orienting cartridge containing the properly oriented needle is thereupon rotated back to a horizontal position to deposit the needle within a mold with the beveled point thereof in proper alignment. The plastic hub, grip or wings are then molded in place about the needle. The beveled needle point of the resultant device is accordingly in proper alignment with the grip or wings for subsequent venipuncture.

3,693,816

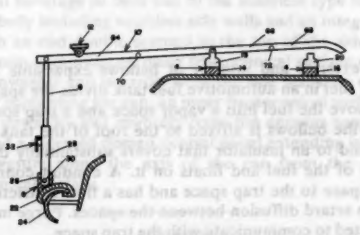
Patent Not Issued For This Number

3,693,817

VEHICLE TOP BOAT LOADER AND CARRIER

Francis M. Van de Water, 2330 Lantana Road, Box 9A, Lantana, Fla.

Filed Dec. 4, 1970, Ser. No. 95,279
Int. Cl. B60r *9/00*
U.S. Cl. 214—450 4 Claims



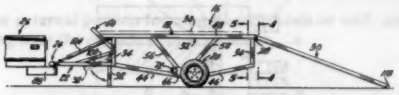
An improved non-complex device for aiding a single operator desiring to load and unload a boat onto and from the top of an auto. The device includes a detachable roof anchor means with a transverse boat support and tie down means, a rest post, a detachable bumper support for holding the vertically movable rest post at various elevated positions, a track member connected to the rest post and the roof anchor means, and a roller means for supporting the boat as it moves along the track member. The front of the boat is placed on the track member adjacent the rest post with the roller means therebetween. The rear of the boat is then lifted and moved toward the rest post while pushing the front of the boat up the track member onto the transverse boat support. Thereafter the rest post is elevated step by step to raise the rear of the boat upward to the height of the transverse boat support. The boat is then secured to the auto roof or removed in a reverse manner.

3,693,818

TRAILER STAND FOR INSTALLING AUTOMOBILE MUFFLER

Raymond E. Teagarden, 6237 Nogales St., Riverside, Calif.

Filed July 27, 1971, Ser. No. 166,526
Int. Cl. B60p *1/28*
U.S. Cl. 214—506 6 Claims



A portable rack for supporting an automobile at an elevated height to facilitate working on the underside thereof, consisting of a wheel-supported frame having a pair of laterally spaced, elevated tracks, and an inclined ramp hinged to its rear end for driving the car on and off. The frame tilts about its centrally located wheels between an inclined drive-on position and a level working position. At the front end of the trailer is a jack-knifing draft connection for attachment to a towing vehicle, which includes a hydraulic cylinder that slows and cushions the change from one position to the other. Except for transverse frame members at the front and rear ends, the space below and between the tracks is entirely clear, so that a workman can get at the muffler without interference from the trailer structure.

3,693,819

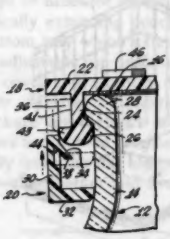
Patent Not Issued For This Number

3,693,820

SAFETY CLOSURE CAP

Robert P. Linkletter, 875 Comstock Avenue, Los Angeles, Calif.

Filed June 3, 1971, Ser. No. 149,553
Int. Cl. A61j *1/00*
U.S. Cl. 215—9 16 Claims



A safety closure having a snap-on cap which is held in place on a container by a rotary safety ring and which cannot be removed without first removing the ring from the cap. The ring is locked to the cap by a plurality of flexible fingers which prevent the ring from being removed from the cap unless the ring is first precisely aligned in a preselected position relative to the cap, but which allows the ring to be repositioned around

the cap and locked thereto without first prepositioning the ring in any particular rotary position relative to the cap.

3,693,821

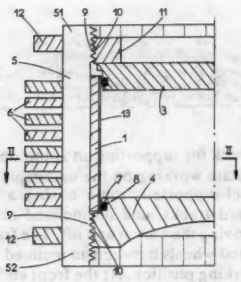
Patent Not Issued For This Number

3,693,822

RECEPTACLE DESIGNED TO WITHSTAND AN INTERNAL PRESSURE

Georges Thillet, 26 Avenue Edouard Vaillant, Grenoble, France

Filed Jan. 12, 1971, Ser. No. 105,901
Int. Cl. B65d *53/02*
U.S. Cl. 220—3 **8 Claims**



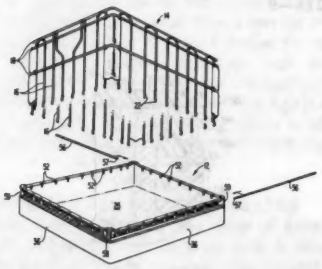
A receptacle for withstanding internal pressure and including a barrel, tie bars outside the barrel, end-plates for the barrel secured by the tie bars and external hoops restraining the tie bars against radial outward displacement.

3,693,823

REPAIRABLE PLASTIC AND WIRE CRATE

Houston Rehrig, 3730 East 26th St., Los Angeles, Calif.

Filed April 24, 1970, Ser. No. 31,497
Int. Cl. B65d *7/14, 7/32, 7/20*
U.S. Cl. 220—4 R **14 Claims**



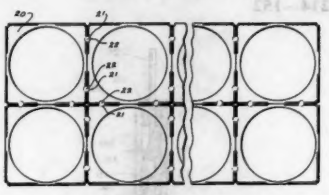
A material handling crate having a molded plastic bottom panel portion and a body portion formed from a plurality of rod-like metallic members rigidly joined in fixed relation with an improved means for securing the bottom portion and the body portion together to permit assembly and disassembly of the structure to facilitate repair of a damaged crate.

3,693,824

BAKERY PAN

Charles E. Phillips, Cincinnati, Ohio, assignor to Lockwood Manufacturing Company, Cincinnati, Ohio

Filed Aug. 5, 1970, Ser. No. 61,346
Int. Cl. B65d *21/02*
U.S. Cl. 220—23.2 **3 Claims**



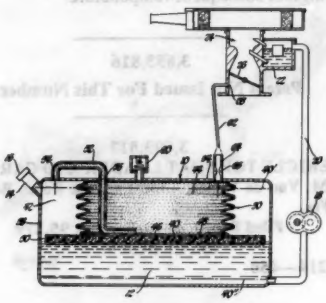
A bakery pan comprising a series of cups drawn from rectangular sheet metal plates. The lateral edges of each plate are bent downwardly at right angles to the plane of the plate to provide welding and reinforcing edge flanges, which flanges are vertically spot welded to flanges of adjacent plates to form a pan from a matrix or array of plates. The resulting pan or array of cups are reinforced in the plane of the plate (horizontally) by the abutting vertical flanges of the plates, only small portions of which are consumed by the spot welds.

3,693,825

FUEL TANK HAVING BELLOWS FOR CONTROL OF FUEL EVAPORATION

Douglas A. Richman, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 28, 1971, Ser. No. 157,225
Int. Cl. B65d *25/00*
U.S. Cl. 220—26 R **3 Claims**



The exterior and interior of bellows expansible with the level of fuel in an automotive fuel tank divide the space in the tank above the fuel into a vapor space and a trap space. One end of the bellows is affixed to the roof of the tank and the other end to an insulator that covers substantially the entire surface of the fuel and floats on it. A conduit connects the vapor space to the trap space and has a flow restriction sufficient to retard diffusion between the spaces. Purge means are connected to communicate with the trap space.

3,693,826

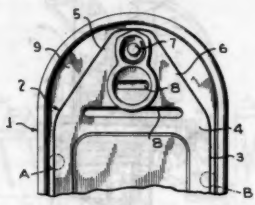
Patent Not Issued For This Number

3,693,827

PACKAGING CONTAINERS MADE OF SHEET METAL WITH TEAR-OPEN DEVICE

Martin Baumeyer, and Luebeck Wilhelm Neben, both of Hamburg, Germany, assignors to Schmalbach-Lubeca-Werke, Braunschweig, Germany

Filed Feb. 19, 1971, Ser. No. 116,823
Claims priority, application Germany, Feb. 21, 1970, P 20 08 090.4
Int. Cl. B65d 17/24
U.S. Cl. 220—54 1 Claim



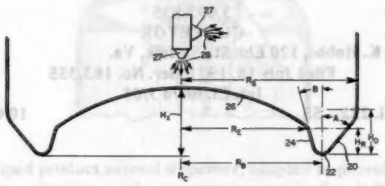
This disclosure relates to the formation of a weakening line defining an opening panel part of a container, the weakening line being formed by configurated dies having opposed portions which are aligned and other portions which are transversely misaligned whereby when the dies strike a panel, offsetting of a portion of the panel occurs together with a reduction in thickness of the panel in the area of die alignment. The die construction is one which is not readily subject to wear or damage.

3,693,828

SEAMLESS STEEL CONTAINERS

Raymond H. P. Kneusel, Flourtown, Pa., and Vinson S. Potts, Cherry Hill, N.J., assignors to Crown Corp & Seal Company, Inc.

Filed July 22, 1970, Ser. No. 57,124
Int. Cl. B65d 7/42
U.S. Cl. 220—66 6 Claims



A steel beverage or beer can of the seamless type having a unitary body including seamless side walls and an integral bottom with an end double seamed to the top of the side walls. The bottom comprises an outer frustoconical surface extending downwardly and inwardly from the side walls, an annular bead for supporting the can, an inner frustoconical surface extending upwardly and inwardly from the annular supporting bead, and a recessed domed central panel extending inwardly and upwardly along the axis of the can from the second frustoconical surface.

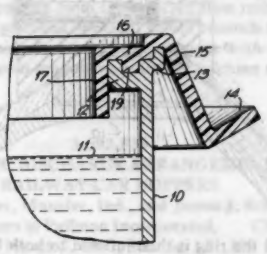
3,693,829

PROTECTIVE APRON FOR CONTAINER

Rita L. Price, Box 966 Wintucket Cove, Edgartown, Mass.

Filed May 1, 1970, Ser. No. 33,668
Int. Cl. B65d 25/00
U.S. Cl. 220—90 4 Claims

A protective apron for disposal on the top of a container such as a paint can, having a funnel-shaped internal portion opened to the contents of the container, a mid portion serving as a connector for detachably mounting to the rim of the can,



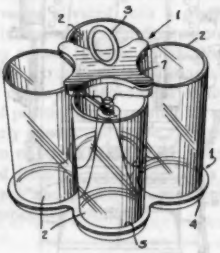
and an external portion forming a catch basin or well, and extending over the outside of the container.

3,693,830

PACKAGE FOR TUMBLERS AND THE LIKE

Richard K. Oglesbee, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Filed Nov. 12, 1970, Ser. No. 88,811
Int. Cl. B65d 75/00
U.S. Cl. 220—102 8 Claims



An improved package for storing, transporting, and displaying articles such as tumblers is disclosed. The package has a shaped bottom tray preferably formed of thin plastic sheeting having spaced cups or nests for receiving the bottoms of the tumblers. A vertically extending pedestal forms the central portion of the bottom tray which extends upwardly between the tumblers. An adjustable top preferably formed of molded plastic, has a flat cover and a central downwardly extending toothed spike for adjustably engaging the bottom tray pedestal. The package top includes several vertical tumbler separating members and curved tumbler rim grips which also extend downwardly from the flat top cover to hold the tumblers spaced from one another and firmly positioned on the bottom tray.

3,693,831

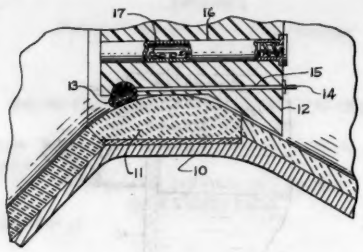
CLOSURE FOR OPEN-MOUTH VESSELS

Denny M. West, Trussville, Ala., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed July 30, 1970, Ser. No. 59,494
Int. Cl. B65d 39/12
U.S. Cl. 220—24.5 5 Claims

A closure for the opening in open-mouth vessels such as bottles, jars, rocket motor nozzles, casks and the like which in-

cludes a plug member and an inflatable ring located near the inner end of the plug. The plug is slid in place in the usual



manner and the ring is then inflated to both hold the plug in place in a positive manner and to provide a very effective seal where the ring bears upon the vessel.

3,693,832

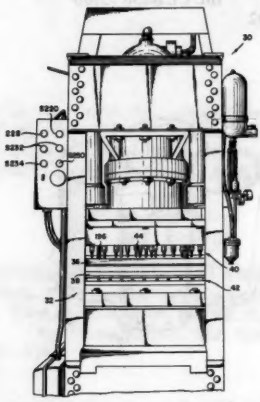
MULTIPLE RIVETING MACHINE

George Adolphi, La Mesa, Calif., assignor to Ametek, Inc.

Division of Ser. No. 740,508, June 27, 1968, Pat. No. 3,543,985. This application April 24, 1970, Ser. No. 31,568

Int. Cl. B65h *3/44*

U.S. Cl. 221—93 **8 Claims**



A multiple riveting machine having an arrangement for feeding a predetermined number of rivets into a workpiece to be riveted and then heading said rivets.

3,693,833

SOWING DEVICE WITH PNEUMATIC SEED SEPARATOR

Otto Weitz, Butzbach, Hessen, Germany, assignor to A. J. Troster, Butzbach/Hessen, Germany

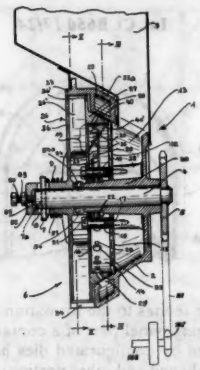
Filed Dec. 10, 1970, Ser. No. 96,748

Claims priority, application Germany, Dec. 11, 1969, P 19 62 150.2; April 22, 1970, P 20 19 394.6; Oct. 26, 1970, P 20 52 468.9

Int. Cl. B23q *7/04*

U.S. Cl. 221—211 **26 Claims**

A vehicle-mounted sowing device includes a continuously rotating drum, centered on a horizontal shaft, axially divided into a pick-up chamber and a distributing chamber, the latter being peripherally subdivided into a multiplicity of outwardly open compartments which communicate with the pick-up chamber at the zenith of the drum and with an outlet at the nadir thereof. The peripheral wall of the pick-up chamber has a multiplicity of generally radial bores leading to a suction manifold via an arcuate slot which surrounds the drum over about half its circumference, terminating at the zenith where seeds or kernels introduced into this chamber at its bottom and carried by the suction in respective bores to the top are released from their seats to drop through a connecting chute into respective compartments of the pick-up chamber. Stationary strippers sweep the peripheral wall of the pick-up chamber in the vicinity of the bores just ahead of the point of



release to dislodge supernumerary kernels; a brush and/or a scraper beyond the zenith serve to detach seed fragments from their seats or push them deeper into the bores which preferably widen toward the suction manifold. The slot of this manifold is formed on a beveled peripheral face of the drum housing juxtaposed with a similar face on the drum provided with the inlets to the seat-forming bores of the pick-up chamber.

3,693,834

Patent Not Issued For This Number

3,693,835

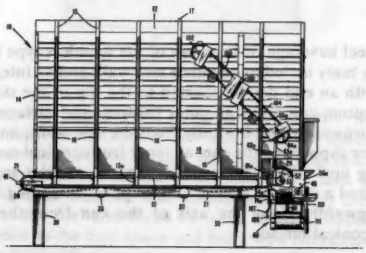
CONVEYOR

Oliver K. Hobbs, 120 Elm St., Suffolk, Va.

Filed July 16, 1971, Ser. No. 163,355

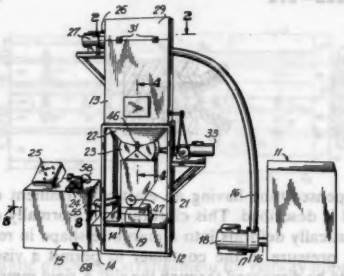
Int. Cl. B67d *5/08*

U.S. Cl. 222—55 **10 Claims**



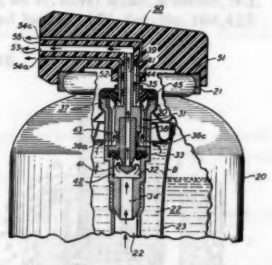
An apparatus is provided for distributing a comminuted material, especially tree bark, over a moving surface in a substantially uniform depth comprising a bin, drag bars which discharge the material from the bin and a ratchet assembly responsive to the depth of material on the moving surface for determining the rate at which the drag bars are moved.

3,693,836
FILLING MACHINE
Nathan A. Eisner, Lawrence, N.Y., assignor to York Feather & Down Corp., Brooklyn, N.Y.
Filed Nov. 10, 1970, Ser. No. 88,357
Int. Cl. G01g *13/00*
U.S. Cl. 222—77 13 Claims



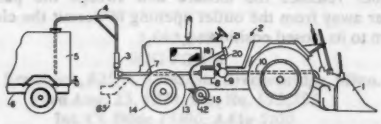
A filling machine for separating feathers and down supplied in bulk, measuring a finite quantity thereof and delivering same to a pocket defined in a garment or other article for the filling of the pocket.

3,693,837
STRIPED PRODUCT AEROSOL DISPENSER
Edward R. Yuhas, Yonkers, N.Y., assignor to Fluid Chemical Company, Inc., Newark, N.J.
Filed April 23, 1970, Ser. No. 31,154
Int. Cl. B65d *35/22*
U.S. Cl. 222—94 3 Claims



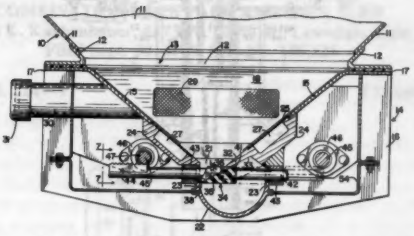
A striped product aerosol dispenser, adapted to provide the separate drawing of separately-contained materials therethrough, to be co-dispensed in striped product form.

3,693,838
MATERIAL APPLICATION RATE INDICATOR
Edwin J. Haker, Elm Grove, and Norman L. Peterson, Wauwatosa, both of Wis., assignors to Rex Chainbelt Inc., Milwaukee, Wis.
Filed March 12, 1970, Ser. No. 18,845
Int. Cl. A01c *15/00*
U.S. Cl. 222—178 4 Claims



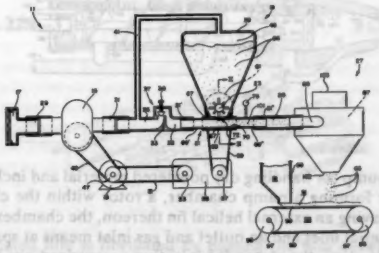
A mobile processing machine that processes and adds a liquid to the material over which it travels is provided with a pair of pulse type electrical tachometers, one driven by a liquid flow meter and the other by a machine part that rotates in proportion to the travel of the machine. The outputs of the tachometers are differentially applied to a milliameter, a contact making milliameter or a sensitive polarized relay which indicates the departure from the selected flow rate or which, through suitable solenoid operated valves controls the flow of the liquid to maintain a selected flow rate with respect to machine speed or to maintain a selected machine speed relative to flow rate.

3,693,839
PNEUMATIC DISCHARGE ARRANGEMENT FOR RAILWAY CAR HOPPERS
William R. Shaver, Munster, Ind., and James J. Schuller, Dolton, Ill., assignors to Pullman Incorporated, Chicago, Ill.
Filed March 5, 1971, Ser. No. 121,379
Int. Cl. B65d *5/54*
U.S. Cl. 222—193 2 Claims



A pneumatic discharge arrangement for railway hopper cars comprises a housing divided into a plurality of discharge chambers each including an elongated opening. The openings are regulated by means of slide valves disposed underneath the opening within a trough which is adapted to be connected to a pneumatic conveyer. Movement of the valves between open and closed positions is regulated by means of rotatable shafts respectively connected to the valves and positioned to project out from opposite ends of the housing so the valves can be operated from opposite sides of a railway car. The shafts include rack and pinion arrangements for moving the valves to their respective positions.

3,693,840
DISPENSING DEVICE FOR SALT AND THE LIKE
George N. Starr, 1034 Craigwood Drive, Memphis, Tenn.
Continuation-in-part of Ser. No. 15,463, March 2, 1970, abandoned. This application Dec. 18, 1970, Ser. No. 99,531
Int. Cl. A47f *1/03*
U.S. Cl. 222—193 10 Claims



A machine used to automatically dispense a regulated quantity of hygroscopic granular substances as salt or the like onto a continuously moving processed food product, e.g., dough or cheese, while in a phase of preparation. The machine includes a prime mover which drives an air blower and an agitator, a

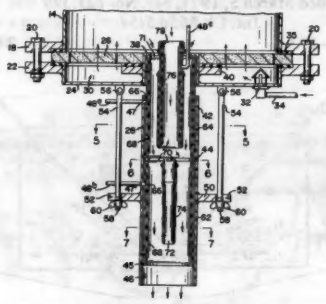
pressurized hopper including a unique co-acting valve agitator assembly, a pneumatic conveyor and a cyclonic separator.

An alternate embodiment is also included which comprises substituting one type restrictor orifice fitting with a second type. Each of the two type restrictor fittings includes a variable restrictor orifice, i.e., the one for the principal embodiment is a globe valve while the alternate one is a sliding action piston or divider valve.

3,693,841
DISPENSER

Henry H. Hansen, P.O. Box 16366, Temple Terrace, Fla.

Filed June 1, 1970, Ser. No. 42,225
Int. Cl. B65g *69/06*
U.S. Cl. 222—195 **9 Claims**

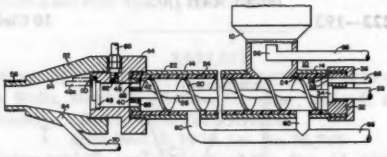


A sleeve valve structure for accurately dispensing particulate material which comprises a unique arrangement of a plurality of concentric tubes. Each tube is lined with an elastomeric web and is so associated with the other tubes that when pressurized air is selectively introduced behind each web, the web is inflated, thereby blocking that tube. By successively blocking the tubes, the flow rate through the valve is very accurately regulated.

3,693,842
AERATED POWDER PUMP

Virgil J. Cozzarin, Clarence; Francis C. Kappermann, Buffalo, both of N.Y., and Harry P. Kipple, Penn Hills, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 17, 1970, Ser. No. 64,443
Int. Cl. B65g *3/12*
U.S. Cl. 222—195 **5 Claims**



A pump for handling dry powdered material and including a stator forming a pump chamber, a rotor within the chamber and having an external helical fin thereon, the chamber having a material inlet and an outlet and gas inlet means at spaced intervals along the stator for injecting pressurized gas into the chamber, whereby the powdered material is aerated as the material moves through the chamber from the inlet to the outlet. The internal wall of the stator is preferably provided with a coating of polytetrafluoroetylene to minimize adhesion of the material to the stator wall.

3,693,843
SLITTED RESILIENT CLOSURE HAVING SUBSTANTIALLY RIGID CAP

Robert D. O. Perry, 645 E. Micheltorena St., Santa Barbara, Calif., and Joseph F. Markiewicz, 58 Mendacino Drive, Goleta, Calif.

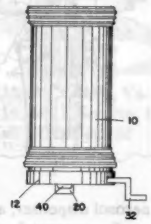
Filed Jan. 6, 1971, Ser. No. 104,243
Int. Cl. B65d *35/08*
U.S. Cl. 222—212 **10 Claims**

A dispenser tube having an elastically resilient closure at one end is described. This closure has a normally closed slit that elastically deforms into a marquise shape in response to internal pressure in the container to permit a viscous fluid therein to be dispensed through the slit. A rigid removable cap is provided over the closure. Detents on the side walls of the closure adjacent the slit hold the cap in place. The walls on which the detents are mounted are elastically resilient so as to be forced outwardly in response to internal pressure in the container for tightly retaining the cap, and are elastically deformable inwardly to permit cap removal when desired.

3,693,844
DISCHARGE MEANS FOR PARTICULATE MATTER DISPENSER

William Henry Willeke, 822 Franklin Ave., Lancaster, Ohio

Filed June 11, 1971, Ser. No. 152,331
Int. Cl. B65d *37/00*
U.S. Cl. 222—213 **12 Claims**



A resiliently flexible outlet closure is molded to a container lid. The closure is hingedly connected at its edge and resiliently biased to seat in and block an outlet opening in the lid. A rotatably mounted crank member extends through the lid edges and carries a butterfly member which is rotatable into engagement with the closure by means of the crank member. Rotation of the crank member engages the butterfly member with the closure to push the closure open and permit discharge of particulate matter. Further rotation of the crank member releases the closure and sweeps the particulate matter away from the outlet opening to permit the closure to return to its closed position.

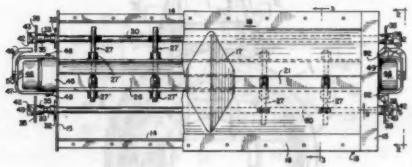
3,693,845
Patent Not Issued For This Number

3,693,846

PNEUMATIC DISCHARGE ARRANGEMENT FOR RAILWAY CAR HOPPERS

James J. Schuller, Dolton, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed March 5, 1971, Ser. No. 121,380
Int. Cl. B65d 47/20
U.S. Cl. 222—506 4 Claims



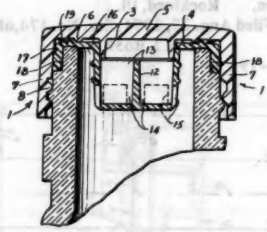
A pneumatic discharge arrangement for railway hopper cars comprises a housing divided into separate discharge chambers having valve openings and control means located therein for selectively discharging from said chambers. The openings are regulated by means of valves which are individually operable by a plurality of operating shafts projecting outwardly from opposite ends of the housings. The improvement includes locking elements for locking the valves in a closed position said locking elements being associated with removable cap locking means provided at opposite ends of a discharge trough which is adapted to be connected to a pneumatic discharge conveyer.

3,693,847

BOTTLE CAP AND POURING FITMENT ASSEMBLY

Royal H. Gibson, 94 W. River Road, Rumson, N.J.

Filed Jan. 6, 1971, Ser. No. 104,423
Int. Cl. B65d 47/00
U.S. Cl. 222—546 1 Claim



A bottle cap and pouring fitment is assembled before being attached to a bottle. When the cap is removed from the bottle, the fitment remains in the neck of the bottle. Meanwhile the cap and fitment cooperate to provide protection against leakage even when the cap is not seated securely.

3,693,848

WIG FORM

Irwin G. Breitbach, 825 N. Tenth St., Breckenridge, Minn.

Filed Aug. 23, 1971, Ser. No. 173,785
Int. Cl. D06c 15/00; A41g 5/00
U.S. Cl. 223—66 4 Claims

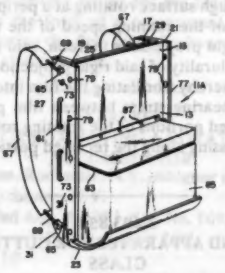
A wig form in the shape of a human head having passages therein terminating in circumferentially spaced openings in the head, and elongated flexible members longitudinally movable in the passages and having sharp pointed ends moving inwardly and outwardly through the openings and through a wig placed on the form to releasably anchor the wig thereon.

3,693,849

COMBINATION BACK PACK AND PACK SLED

Melvin K. Knabenbauer, 4573 W. 154th St., Lawndale, Calif.

Filed Sept. 30, 1971, Ser. No. 185,124
Int. Cl. A45f 3/00
U.S. Cl. 224—9 8 Claims



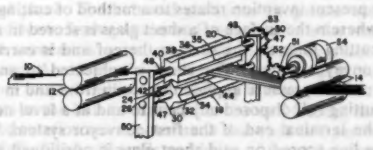
A structure including telescoping sections each having sled-like side rails and a flat center portion, one of which sections has an upwardly curved toboggan-like front end with a curvature corresponding with the curvature of the leading edges of the side rails, the structure being adapted to be carried on a person's back by use of shoulder straps when in a closed configuration, and to be used to carry a load in the form of a sled through snow and ice when in an open configuration.

3,693,850

FIBRILLATION BY OPPOSED BEATER BARS

George B. Feild, Stone Harbor, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Filed Aug. 3, 1970, Ser. No. 60,444
Int. Cl. B26f 3/02
U.S. Cl. 225—3 9 Claims



A striated film is fibrillated by passing the film between a pair of opposing rotating beater bars. In this manner uniform tension is maintained across the film urging the film in engagement with serrated edges which may be on one or both of the beater bars. This system permits higher film linear speed than can be achieved in previous prior art beater bar systems.

3,693,851

METHOD FOR FIBRILLATING STRETCHED FILM

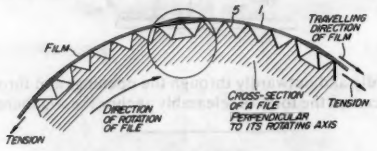
Masahide Yazawa, Tokyo, Japan, assignor to Polymer Processing Research Institute, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 510,546, Nov. 30, 1965, abandoned, and a continuation-in-part of Ser. No. 569,714, Aug. 2, 1966, abandoned. This application April 23, 1969, Ser. No. 818,529

Claims priority, application Japan, June 5, 1965, 40/33241; April 14, 1966, 41/23966

Int. Cl. B26f 3/02

U.S. Cl. 225—3 13 Claims



The present disclosure is directed to a method and apparatus for manufacturing split-fibers from a uniaxially oriented film obtained from a fiber-forming polymer which comprises slide-rubbing at least one side of the oriented film in the oriented direction under an effective longitudinal tension on at least one rough surface rotating at a peripheral speed different from that of the running speed of the film and having many tiny and rigid projections thereon, said film contacting, in succession, a plurality of said rigid projections which do not pierce the film, thereby fibrillating the film into many fibrils as a result of the shearing stress between film portions passing along the projected portions of the rotating rough surface and those portions passing along the recessed portions of the rotating surface.

3,693,852

METHOD AND APPARATUS FOR CUTTING SHEET GLASS

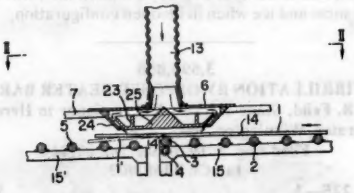
Katsuyasu Simomura, Mieken, Japan, assignor to Central Glass Co., Ltd., Ube-shi, Yamaguchi-ken, Japan

Filed Oct. 30, 1970, Ser. No. 85,542

Claims priority, application Japan, Dec. 1, 1969, 44/96406

Int. Cl. B26f 3/00

U.S. Cl. 225—4 5 Claims



The present invention relates to a method of cutting a sheet glass wherein the surface of a sheet glass is scored in advance with cutting lines on the surface thereof and is carried by a first conveyor system. The sheet is subjected to an almost uniform fluid pressure applied thereto in front and in the rear of a cutting roll disposed adjacent to and at a level not lower than the terminal end of the first conveyor system. When a cutting line scored on said sheet glass is positioned adjacent the top of the periphery of said cutting roll, a part of the sheet glass in front of the cutting roll, which works as a fulcrum, is bent downwardly by the pressure and broken along said cutting line. The pressure fluid is supplied from a fluid supply source via a supply pipe and is jetted from jet-nozzles opening at the bottom of a fluid-jetting device connected to one end of said supply pipe.

3,693,853

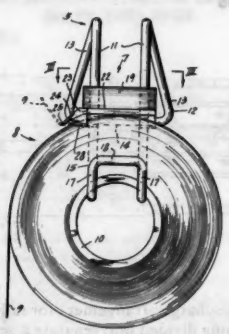
FLAGGING ROLL HOLDER AND DISPENSER

Burton L. Siegal, Chicago, Ill., assignor to American Cutting & Binding Co., Chicago, Ill.

Filed Aug. 20, 1970, Ser. No. 65,598

Int. Cl. B26f 3/02

U.S. Cl. 225—58 12 Claims



A holder and dispenser especially suitable for supporting a roll of flagging strip comprises a roll-supporting bracket having means to receive and support the roll rotatably, enabling paying out of the strip wound on the roll while a roll-retaining means carried by the bracket in outer perimeter opposition to the roll presents a cutting edge to facilitate severance of paid out flagging strip from the roll. The device is especially adapted to be made up of just two parts, the bracket and the retaining means in the form of a frictionally held sliding presser and cut-off member which adjusts to the changing roll diameter.

3,693,854

Patent Not Issued For This Number

3,693,855

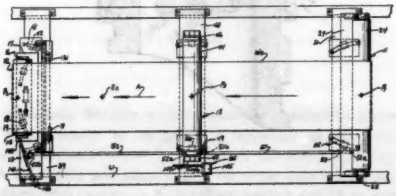
WEB GUIDE APPARATUS

William A. Bonner, Appleton, Wis., assignor to Rockford Servo Corporation, Rockford, Ill.

Filed Aug. 25, 1971, Ser. No. 174,686

Int. Cl. B65h 25/08

U.S. Cl. 226—19 19 Claims

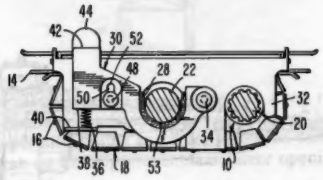


A web guide apparatus wherein a web passes from an entrance web guide roller over an exit web guide roller in which the exit web guide roller is mounted on an exit roller mounting base for movement relative thereto in a direction crosswise of the path of web travel to effect correction of misalignment of the web under the control of a web position detector and in which the exit roller mounting base and the entrance roller are mounted for pivotal movement relative to the path of web travel and are pivoted in unison about their respective pivot axes when the movement of the exit roller relative to the exit roller mounting base exceeds a preselected value.

3,693,856
RELEASABLE CLAMP FOR A DRIVING MEMBER OF A STRIP-LIKE MEDIUM

Joseph W. Funk, Dearborn, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 4, 1971, Ser. No. 103,729
Int. Cl. G03b 1/30
U.S. Cl. 226—74 5 Claims

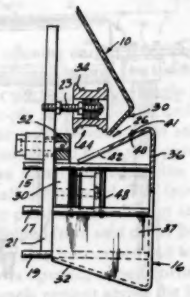


A device for releasably clamping a driving member of a strip-like medium in a desired transverse position with respect to a feed direction where the driving member is axially slidable along a transverse shaft. A pivotal clamping member with a friction surface abuttable against the shaft is biased in abutment therewith by a resilient biasing means. Pivotal displacement of the clamping member is opposition to the biasing means serves to free the driving member for axial adjustment along the shaft.

3,693,857
LOADING DEVICE

Ray L. Short, Jr., Glenview; Howard Bowen, Wilmette, and David L. Henderson, Mundelein, all of Ill., assignors to Research Technology Incorporated, Skokie, Ill.

Filed July 16, 1971, Ser. No. 163,244
Int. Cl. G03b 1/58
U.S. Cl. 226—91 12 Claims

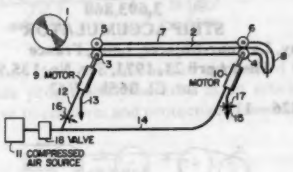


This invention provides an improvement for loading a strip, film, tape and the like, in a transport mechanism which includes a spaced pair of relatively movable rollers and a predetermined pathway between the rollers. The improvement comprises means for positioning the rollers relative to one another, an inclined plane surface canted downwardly toward the space between the rollers and lying in a plane parallel to the film pathway between the rollers, and a casing part extending over at least one of the rollers and displaced rearwardly from the outer edge of the inclined plane surface to provide a shoulder on the outer edge of the surface having free access vertically above it to facilitate positioning film on the surface.

3,693,858
DEVICE FOR FEEDING A CONSUMABLE WIRE ELECTRODE TO AN ARC WELDING TORCH

Takeshi Araya, Tokyo, and Tsugio Udagawa, Kawaguchi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 20, 1971, Ser. No. 164,288
Claims priority, application Japan, July 24, 1970, 45/64281
Int. Cl. B65h 17/20
U.S. Cl. 226—108 5 Claims

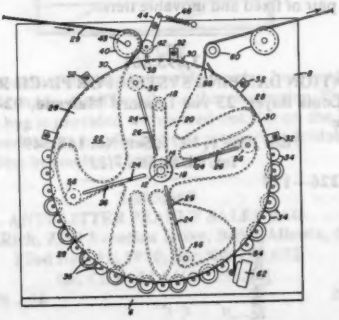


A device for feeding a consumable wire electrode to an arc welding torch from a wire reel through a flexible conduit tube by means of two wire feeding means of the push and pull types. The wire feeding means of the push type is driven by a motor having a substantially constant torque characteristic, while the wire feeding means of the pull type is driven by a motor having a substantially constant speed characteristic. Specifically, the driving motor for the feeding means of the pull type takes the form of a compressed-air driven motor which, by regulating the flow rate of exhaust air, has a desired constant speed characteristic.

3,693,859
WEB SLACK BOX HAVING A ROTATABLE WEB ACCUMULATOR

LeRoy C. Nielsen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 4, 1971, Ser. No. 169,020
Int. Cl. B65h 17/42
U.S. Cl. 226—118 14 Claims



A slack box having a rotatable web accumulator comprising a hub and radially extending partitions mounted for rotation in a vertical plane. The hub and partitions cooperate with side walls or discs to form quandrantal compartments for receiving a web in succession upon rotation of the hub by a hub drive mechanism. A web feeding mechanism gravity feeds the web in random looped fashion successively into each of the compartments as the hub is rotated, and the web feeding rate and hub speed rotation are selected such that each compartment is substantially filled with coils and loops of the web before it is fed into the next adjacent compartment. The web is successively withdrawn from the filled compartments and preferably fed continuously into a web processing device or the like. A sensing mechanism senses the amount of web or the web-filled condition of each of the compartments as it is moved past the sensing mechanism, and in response to a web-filled condition that is higher or greater than a predetermined web-filled con-

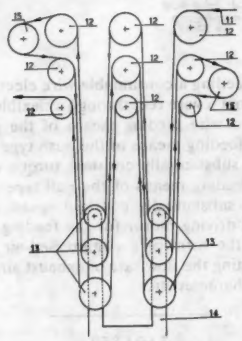
dition, stops or disables the hub drive and web-feeding mechanisms for discontinuing web feed into the web accumulator. When sufficient web has been withdrawn from the web-filled compartment so that its web-filled condition is lower or less than the predetermined web-filled condition, the sensing mechanism enables or actuates the web feeding and hub drive mechanisms for feeding web into the rotating web accumulator.

3,693,860

STRIP ACCUMULATOR

Pierre Gay, La Tour-Enjarez, Loire, France

Filed April 21, 1971, Ser. No. 135,921
Int. Cl. B65h *17/42*
U.S. Cl. 226—119 **3 Claims**



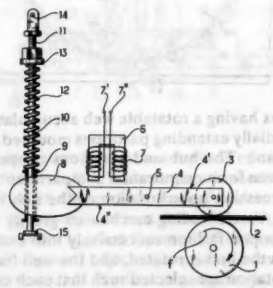
A strip accumulator comprises a group of fixed rollers and a group of vertically movable rollers, the fixed and movable rollers being arranged in tiers with the same number of fixed tiers as movable tiers, and a number of return rollers equal to one less than the number of tiers, the strip passes over the rollers of one fixed tier and one movable tier, passing from a roller of one tier to a roller of the other tier, then over a return roller to the next pair of fixed and movable tiers.

3,693,861

VIBRATION DAMPING SYSTEM FOR PINCH ROLLER

Marcel-Louis Boyer, 23 rue Leonard Mafrand, 92-Chatillon, France

Filed June 1, 1971, Ser. No. 148,549
Int. Cl. B65h *17/22*
U.S. Cl. 226—177 **8 Claims**



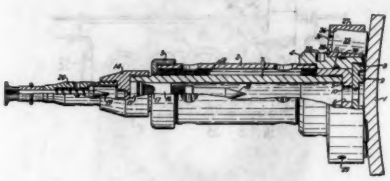
Drum for a tape reader where the tape speed reaches several hundreds of characters per second concerning more particularly the mounting of a roller which, pressing the tape on the sprocket of the drum which is in continual motion, gives the tape a jerky motion, driving it at the required rate. High-speed operation is improved by a double vibration damping system.

3,693,862

EXPLOSIVELY ACTUATED TOOL WITH MAGNETIC HEAD

Joseph L. Giebel, Pittsburgh, and Ernest E. Temple, Murrysville, both of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Nov. 13, 1970, Ser. No. 89,198
Int. Cl. B25c *1/18*
U.S. Cl. 227—11 **4 Claims**



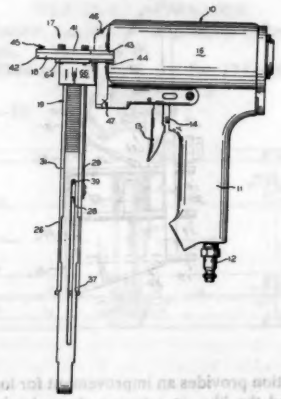
An explosively actuated tool for driving a stud into a metal object includes a collar secured to the front end of a sleeve containing the barrel of the tool. Disposed around the collar is a plurality of magnets that are rigidly connected to it. The magnets project forward for engagement with a metal object in order to hold the front end of the tool against it during firing of the tool.

3,693,863

TOOL ATTACHMENT AND METHOD FOR AUTOMATICALLY APPLYING FASTENERS

Hugh Black, 225 41st St., Downers Grove, Ill.

Filed Oct. 27, 1969, Ser. No. 869,837
Int. Cl. B25c *1/04*
U.S. Cl. 227—127 **11 Claims**



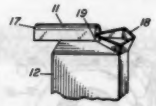
An attachment arrangement for use with driving tools, such as air guns, or the like. The attachment facilitates driving a series of separate fasteners that are held on a carrier to fasten contiguous pieces of wood together. The attachment arrangement includes a characterized nose structure having an aperture therethrough to enable the carrier to pass through the nose structure and permit the automatic application of the separate fasteners in the fabrication of furniture, or the like.

3,693,864

SLIDABLE LOCKING CLOSURE

Howard Wilkins, Elmhurst, Ill., assignor to General Foods Corporation, White Plains, N.Y.

Filed Nov. 12, 1970, Ser. No. 88,894
Int. Cl. B65d 5/74
U.S. Cl. 229—17 G 7 Claims



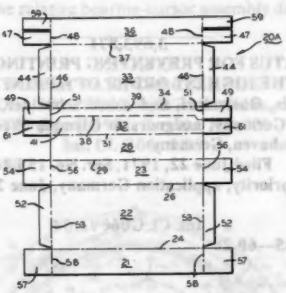
A slidable closure device is positioned on a top ridge of a milk-type carton container and moves in a horizontal direction to permit opening and resealing of the container. A breakaway tab on the clip prevents container opening unless the tab is removed.

3,693,865

END LOADED TOP OPENING CARTON

John D. Desmond, and Joseph J. Hart, both of Philadelphia, Pa., assignors to Container Corporation of America, Chicago, Ill.

Filed April 13, 1971, Ser. No. 133,502
Int. Cl. B65d 5/22
U.S. Cl. 229—33 11 Claims



An end loaded top opening carton is formed from a unitary cut and scored blank of paperboard, and is folded to define integral body and cover portions having single-ply top and bottom walls and double-ply front, rear and end walls. The rear wall includes an inner panel folded from said body portion wall and an outer panel formed from said cover portion, there being an intermediate panel hinged to the rear wall inner panel and the rear wall outer panel. The front and end walls each include an inner portion folded from said body portion and an outer portion folded from said cover portion. The front and end walls are separable into upper and lower sections, so that when the carton is opened, upper portions of the front, end and rear inner panels project above the lower sections of the front and end outer panels to form a collar for the articles, the collar being telescopically received within the front, end and rear outer panel upper sections.

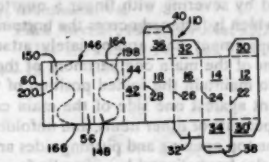
3,693,866

SHIPPING CARTON FOR FRAGILE ARTICLES AND BLANK FOR PRODUCING THE SAME

Glenn E. Struble, Fairfield, Ohio, assignor to Diamond International Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 881,996, Dec. 4, 1969, abandoned. This application Oct. 27, 1971, Ser. No. 193,037
Int. Cl. B65d 5/10
U.S. Cl. 229—39 B 3 Claims

This disclosure relates to improvements in tubular cartons and blanks for accommodating and protecting different sized fragile articles in which a one-piece blank is cut, scored and assembled to provide a rectangular sleeve incorporating therein longitudinally extending generally parallel cushioning walls having formed therein weakened or perforated rupture sections which are progressively severed as an article is inserted in the sleeve to conform and protectively accommodate the article.

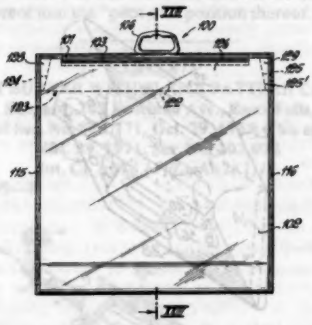


3,693,867

HANDLE-TYPE CARRYING BAG MADE OF PLASTICS MATERIAL SHEETING

August Schwarzkopf, Heinestrasse 2, 454 Lengerich of Westphalia, Germany

Filed June 23, 1970, Ser. No. 49,084
Claims priority, application Germany, June 24, 1969, P 19 32 047.9
Int. Cl. B65d 33/06
U.S. Cl. 229—54 R 3 Claims



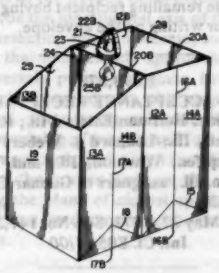
Only one wall of the bag is provided with a heat-sealed carrying handle made of stiff synthetic thermoplastics. The other wall of the bag is provided with a lead-out slot on the level of the lower end of the handle and has a reversely foldable portion extending beyond said lead-out slot.

3,693,868

ANTI-LITTER PEANUT SALES BAG

Archie G. Rich, 2350 Venetian Drive, S.W., Atlanta, Ga.

Filed Dec. 31, 1970, Ser. No. 103,032
Int. Cl. B65d 31/12, 25/28
U.S. Cl. 229—56 2 Claims



A suitable paper bag for containing peanuts, or other marketable items usually shelled, peeled, stripped or unwrapped

by the purchaser or other consumer during the process of consuming, with an attached collapsible hull-receptacle-compartment in which the peanut hulls and/or other waste material may be deposited by the purchaser, or other consumer, which is accomplished by severing with finger a quarter-inch wide strip of paper which is fastened across the bottom of the hull-receptacle-compartment and appropriately attached to the adjacent bottom of the main compartment of the bag by the manufacturer to maintain the folded position of the receptacle-compartment against one side of the main compartment for containing peanuts or other items, and unfolding by inserting fingers in the top opening and pushing sides and bottom in place. The bag also has a pivotal-loop-handle for carrying it on finger while shelling the peanuts, or other items, the shaft of which is firmly attached to the top mid-area of the center dividing wall of the bag to afford easy rotation and accessibility of the appropriate compartment during the process. Said handle is made of pliable material and can be easily flexed downward against the inner wall to which attached when not in use.

3,693,869

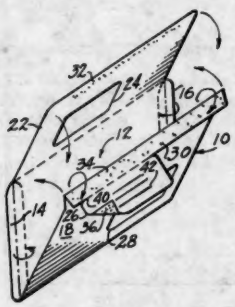
REMAILABLE MAILING ENVELOPE

Robert F. Eaves, Jr., 2390 Main St., Tucker, Ga.

Filed March 24, 1970, Ser. No. 24,049

Int. Cl. B65d *27/06, 27/04*

U.S. Cl. 229—73 **4 Claims**



A window envelope arrangement with the original sender's return address label removable by recipient and replaceable to cover the window which had originally exposed the recipient's address so that the same envelope may be returned in the mail by the recipient with an enclosure, such as a check, back to the original sender. Capable of expression in several different forms, the envelope body itself resembles the usual window arrangement but a top sealing flap with the return address incorporates a detachable remailable sender's label flap with either self-stick or wettable glue, perforated on the remailable return address label so that it is torn away and stuck in place over the window without the remailing recipient having to do any alignment, addressing or writing on the envelope.

3,693,870

CASH ACCEPTANCE RECEPTACLE

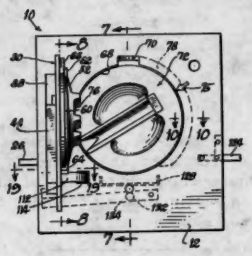
George G. Dominick, Hoffman Estates, Ill.; Rinaldo Sciacero, Arlington Heights, Ill.; Leonard J. Weber, Broadview, Ill.; George I. Wimpffen, Wheaton, Ill., and Theodore Louis Kardos, Chicago, Ill., assignors to Gonaar Corporation, Elk Grove Village, Ill.

Filed May 27, 1971, Ser. No. 147,360

Int. Cl. E05g *1/00*

U.S. Cl. 232—16 **14 Claims**

A collection receptacle or vault for receiving valuables from a cash box. The cash box is of the type including a discharge opening and a movable wall normally covering the discharge opening. The receptacle includes a door providing access to an area receiving the cash box. A handle is located on the exterior of the door, and when the door is closed and the handle turned, the cash box is actuated for dumping the valuables through the discharge opening of the cash box into a vault area. Locking mechanisms are provided so that once the rotation is commenced, access to the cash box cannot be obtained until after the dumping of the valuables has occurred. The locking mechanisms include a pawl and ratchet mounted on the door of the receptacle, the pawl and ratchet preventing return movement of the cash box and rotating mechanisms until dumping is completed.



3,693,871

APPARATUS FOR PREVENTING PRINTING OF ZEROS ABOVE THE HIGHEST ORDER OF A PRINTED NUMBER

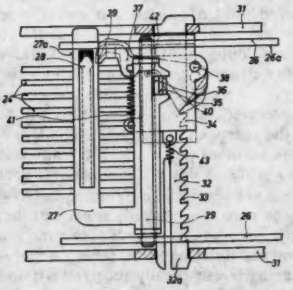
Paul Thevis, Oberndorf, and Adolf Schneider, Altoberndort, both of Germany, assignors to Olympia Wereke A.G., Wilhelmshaven, Germany

Filed June 22, 1971, Ser. No. 155,468

Claims priority, application Germany, June 23, 1970, P 20 36 548.4

Int. Cl. G06c *11/04*

U.S. Cl. 235—60.28 **10 Claims**



A slide moving toward the lowest order of an ordinal series of digital printing elements, carries a coupling feeler which is displaced by the printing element of the highest order of a number represented by the printing elements, to couple the slide with stationary arresting means so that the slide is stopped in a position in which a control means thereof separates the printing elements of orders above the highest order of the number, from other printing means so that no zeros are printed by the printing elements of orders above the highest order of the printed number.

3,693,872

ACRONAV: AN INTEGRATED FLIGHT DATA AIR NAVIGATION COMPUTER SYSTEM

Jack B. Titus, 132 Elliott Drive, Mather AFB, Calif.

Filed Sept. 9, 1971, Ser. No. 178,987
Int. Cl. G06c 27/00
U.S. Cl. 235—78 10 Claims

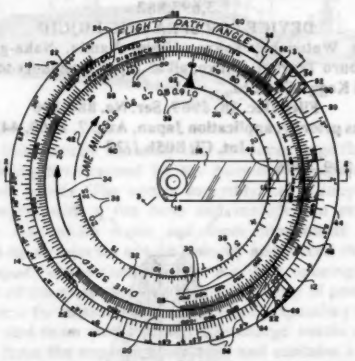
An air navigation computer having a calculator side consisting of a lower disc inscribed with log-distance, compressibility, Mach number and temperature error scales; a central disc inscribed with "TRUE AIR SPEED/GROUND SPEED" and having log-time, density altitude and temperature scales, and a Mach number and temperature error window; and an upper disc having a density altitude window, a pressure altitude scale and an equivalent-calibrated air speed cursor assembly. A computer-wind side includes a relative bearing-cursor assembly disc that is laminated to the reverse side of the calculator side-lower disc and is inscribed with "TRUE AIR SPEED/GROUND SPEED" and radially-aligned wind drift and course indices at the 180° relative bearing value with a radial cursor line extending between the wind drift and true air speed/ground speed indices. A trig-log scale-inscribed disc is interposed between the relative bearing-cursor assembly disc and the calculator-lower disc, and a compass indicator disc is mounted on the relative bearing-cursor assembly disc.

3,693,873

FLIGHT PATH CALCULATOR

Walter G. H. Otte, 1721 Windsor, Wichita, Kans.

Filed July 8, 1971, Ser. No. 160,830
Int. Cl. G06c 3/00
U.S. Cl. 235—88 12 Claims



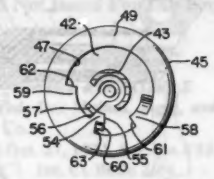
A flight path calculator in the nature of a circular slide rule having first and second relatively movable scale bearing members. The first of such members is logarithmically scaled with numerical indicia interpretable either as having the dimension of vertical distance (feet) or the dimension of vertical speed (feet per minute) for respectively reading the same relative to a first logarithmic scale on the second member that carries numerical indicia of slope distance (nautical miles) and to a second logarithmic scale on the second member that carries numerical indicia of slope speed (knots). Means is provided for indicating the relative positions of the scale bearing members in terms of the slope angle appropriate to the relative settings of the vertical distance — slope distance scales or the vertical speed — slope speed scales. Index markers and a cursor are provided to facilitate reading the indicia of the various scales.

3,693,874

FUEL CONTROL SYSTEM AND CONTROL DEVICE THEREFOR OR THE LIKE

Raymond J. Fox, Irwin, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 27, 1970, Ser. No. 93,238
Int. Cl. F23n 5/24; F16k 35/02
U.S. Cl. 236—15 A 20 Claims



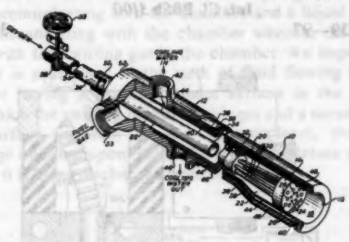
A control device for directing fuel from a source thereof to pilot burner means and to main burner means, the control device having a movable selector which is adapted to be moved in one direction from an "off" position thereof through a "cooking range" thereof to a "pilot off" position thereof. The control device has stop means for preventing uninterrupted movement of the selector from the "cooking range" thereof into the "pilot off" position thereof to prevent accidental pilot outage whereby the operator must axially move the selector before he can move the same from the "cooking range" thereof into the "pilot off" position thereof.

3,693,875

ROCKET BURNER WITH FLAME PATTERN CONTROL

Thomas L. Shepard, 203 Roseland Ave., Essex Fells, N.J.

Division of Ser. No. 872,171, Oct. 29, 1969. This application Nov. 29, 1971, Ser. No. 203,072
Int. Cl. A01n 17/02; A62c 1/12
U.S. Cl. 239—8 5 Claims



An oxygen-fuel burner of the rocket burner type comprising a cylindrical combustion chamber having an open discharge end and a burner plate with separate oxygen and fuel ports constituting the opposite end of the chamber; the projected longitudinal axes of the oxygen ports extending in converging directions towards the longitudinal axis of the chamber but in off-set, non-intersecting relation thereto, so that points on the respective axes that most closely approach the chamber axis define a transversely positioned plane between the burner plate and the chamber exhaust; the projected longitudinal axes of the fuel ports being substantially parallel to the chamber axis for mixing of oxygen and fuel at and beyond the plane of closest approach, and means for adjusting the longitudinal position of the burner plate on the chamber axis and thereby locating the plane of closest approach in relation to the chamber exhaust for determining the pattern of the burner discharge flames.

3,693,876

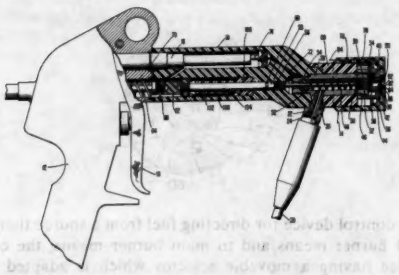
Patent Not Issued For This Number

3,693,877

ELECTROSTATIC SPRAY COATING APPARATUS

Philip L. Cowan, Basking Ridge, N.J., assignor to Electrogasdynamics, Inc., Hanover, N.J.

Filed May 6, 1970, Ser. No. 35,145
Int. Cl. B05b 5/00
U.S. Cl. 239—15 9 Claims



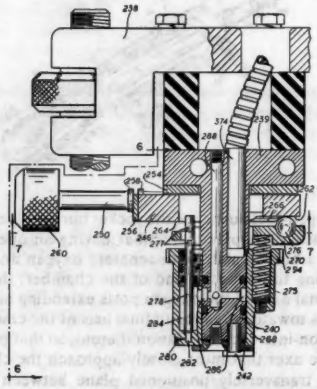
Improved methods and apparatus for charging atomized coating materials and maintaining an electrostatic depositing field in the electrostatic deposition of coating materials. Improved charging is effected by the selectively directed passage of corona discharge current from a primary source thereof through emitted coating material intermediate its point of emission and its locus of atomization to an electrically floating electrode element whose collection potential is maintained by a corona discharge emanating from an exposed end thereof.

3,693,878

SWINGING CEMENT APPLYING MECHANISM

Karl F. Vornberger, Tewksbury, Mass., assignor to Jacob S. Kamborian, West Newton, Mass.

Division of Ser. No. 41,500, May 28, 1970, Pat. No. 3,609,785.
This application March 16, 1971, Ser. No. 124,891
Int. Cl. B05b 3/00
U.S. Cl. 239—97 3 Claims



A cement spraying nozzle that is swingable through a prescribed arc and is effective to spray cement while swinging through an adjustable angle after it has begun to swing and before it terminates its swinging.

3,693,879

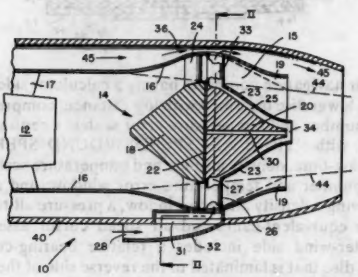
Patent Not Issued For This Number

3,693,880

INFRARED SUPPRESSOR MEANS

Edward F. Versaw, La Canada; Herbert C. Moe, Los Angeles, and Jerry L. Reed, China Lake, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Nov. 2, 1970, Ser. No. 90,208
Int. Cl. B64d 33/04
U.S. Cl. 239—127.3 2 Claims



An air-cooled contoured plug fitted within the exhaust pipe of a gas turbine engine is designed also for use with an afterburning turbojet type having variable position nozzle leaves. The plug is large enough in diameter to hide from view hot engine parts forward of the plug, such as the turbine wheel, exhaust cone, flameholders, and the exhaust pipe wall. By reducing the intensity of radiation from a turbojet engine when operating in non-afterburning power, the detection of a turbojet-powered aircraft by a heat-seeking missile is minimized.

3,693,881

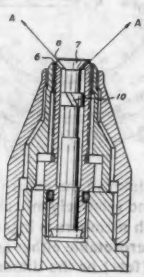
Patent Not Issued For This Number

3,693,882

DEVICE FOR SPRAYING LIQUID

Tamotsu Watanabe, Tokyo; Yasuo Vando, Naka-gun, and Kozaburo Tsurugi, Tokyo, all of Japan, assignors to Nippon Kogei Koggo Co., Ltd.

Filed Dec. 18, 1969, Ser. No. 886,296
Claims priority, application Japan, Aug. 7, 1969, 44/62014
Int. Cl. B05b 1/28
U.S. Cl. 239—296 12 Claims



A method of spraying liquid in a flattened, conical shape through a spray gun having a circular air slit for injecting compressed air and a circular liquid slit disposed adjacent to and around the circular air slit for atomizing the liquid by injecting compressed air from one or more pairs of air jets from outside of the slits and from opposite dispositions with respect to the axis of the spray stream in the inward and tangential direction to the sectional circle of the spray stream of the liquid, thereby expanding the spray of conical liquid particles in one diametrical direction of the sectional circle of the spray stream so as to

flatten the sectional circle. This method is accomplished by a spraying gun having one or more air jets disposed outside the central spraying portion of the liquid and opposite with each other with respect to the center of the spraying portion which is formed with a circular air slit for injecting the compressed air and a circular liquid slit disposed adjacent to and around the air slit for atomizing the liquid.

3,693,883

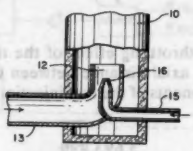
POLLUTION CONTROL DEVICE

Earl K. Stigger, 202 S. Reater Drive, 202 S. Reuter Drive, Ill.

Filed July 20, 1970, Ser. No. 56,446

Int. Cl. F23d *11/10*

U.S. Cl. 239—423 **7 Claims**



An apparatus and method for using the same are disclosed wherein smoke is dispersed by forcing the smoke out of a smoke stack in the form of smoke rings.

3,693,884

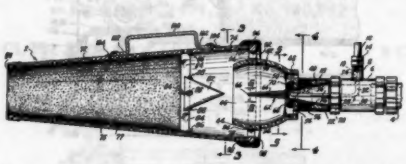
FIRE FOAM NOZZLE

Duane S. Snodgrass, 434 Shelby St., Kingsport, Tenn., and William H. Lauderback, 112 W. Edgefield, Longview, Tex.

Filed Feb. 5, 1971, Ser. No. 113,028

Int. Cl. B05b *7/06*

U.S. Cl. 239—427.5 **27 Claims**



A fire foam nozzle assembly that produces large flakes for extinguishing fires caused by the burning of vapors of inflammable liquids. The nozzle assembly has a coupling for connecting it with a fire hose and includes an expansion chamber into which water and foam concentrate are introduced by an injector at high velocity and forced through a cone-shaped, wire stream divider. Air inlet openings at the inlet end of the expansion chamber allow entry of primary air by eduction for mixture with the divided, expanding streams of water and foam concentrate. A discharge nozzle receives the flow from the expansion chamber and contains a conical deflector mounted upon radial vanes. The deflector splits and transversely directs the flow against the inner surface of the discharge nozzle. A relatively larger and greater number of air inlet openings at the inlet end of the discharge nozzle surrounds the exterior of the expansion chamber for admitting a large volume of secondary air, by eduction, to be mixed with the water and expanding foam concentrate in the discharge nozzle. The interior surface of the discharge nozzle, beyond the conical deflector, has formations that provide a rough surface designed to retard flow and to induce violent turbulence within the discharge nozzle, causing the water and foam concentrate to be mixed with a great volume of air prior to being discharged from the nozzle. The discharge nozzle delivers a stream of foam at very high velocity, the stream being substantially free from drip and eventually feathering out as the force of the stream becomes spent, the foam then falling gently in the form of large flakes similar to snow flakes. The nozzle assembly is non-metallic except for the hose coupling and the wire divider, and is preferably made from epoxy resin components reinforced with fiberglass, the components being secured together by laminated strips of fiberglass cloth saturated with an epoxy resin and allowed to cure, thereby providing a nozzle structure that is very strong but light in weight.

3,693,885

Patent Not Issued For This Number

3,693,886

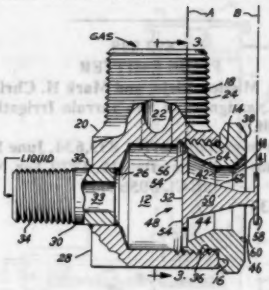
SWIRL AIR NOZZLE

Sherman E. Conrad, Des Moines, Iowa, assignor to Delavan Manufacturing Co.

Filed Oct. 27, 1971, Ser. No. 193,023

Int. Cl. B05b *7/06*

U.S. Cl. 239—432 **14 Claims**



A nozzle for discharging a swirling atomized fluid includes a vortex chamber defined in the nozzle body, a gas inlet tangentially communicating with the chamber and a liquid inlet axially communicating with the chamber wherein the liquid is mixed with the swirling gas in the chamber. An impingement member is positioned in the path of fluid flowing from the chamber having a primary impact surface in the chamber upon which the swirling mixture impinges and a secondary impact surface adjacent to, but spaced from, the nozzle discharge opening upon which the swirling mixture also impinges as it is being discharged from the nozzle.

3,693,887

METHOD AND APPARATUS FOR GASIFYING LIQUID FUELS AND EFFECTING A COMPLETE COMBUSTION THEREOF

Wilhelm Genannt Willi Brodlin, Radolfzellerstrasse 56, 7753 Allensbach, and Siegfried Weishaupt, Max-Weishaupt-strasse, 7959 Schwendi, both of Germany

Filed Oct. 14, 1970, Ser. No. 80,715

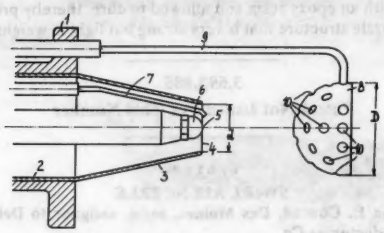
Claims priority, application Germany, Oct. 14, 1969, P 19 57 752.3; Aug. 11, 1970, P 20 39 872.5

Int. Cl. B05b *1/26*

U.S. Cl. 239—500 **9 Claims**

An oil burner comprising a fuel nozzle for ejecting the liquid fuel under pressure in a forwardly diverging spray, and a conical air nozzle coaxially with and surrounding the fuel nozzle for passing a forwardly converging jet of air at a high velocity into the fuel spray so that the air particles will intersect the fuel particles to produce an intimate gaseous mixture which is then propelled against a preferably convex wall of one side of a mixture distributor which is spaced at an adjustable distance from the fuel and air nozzles and is provided with a plurality of bores through which the gaseous mixture passes to the other

side of the distributor where the mixture after being ignited will burn with a blue flame. The mouths of the fuel and air

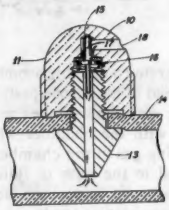


nozzles are disposed within a common plane and the mouth of the air nozzle has a smaller diameter than the distributor.

3,693,888
FLUID EMITTER

Ivan V. Rondas, Mission Viejo, and Mark H. Christy, Balboa, both of Calif., assignors to Sub'Terrain Irrigation Co., Anaheim, Calif.

Continuation-in-part of Ser. No. 833,634, June 16, 1969, abandoned. This application Dec. 10, 1970, Ser. No. 96,690
Int. Cl. B05b *1/32*
U.S. Cl. 239—535 **6 Claims**



An emitter valve having a flow regulating diaphragm which cooperates with fluid pressure to maintain valve orifices free of foreign materials. Such diaphragm is delayed in seating in response to fluid pressure to provide for preliminary purging of the valve orifices.

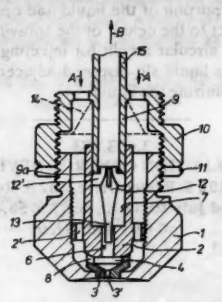
In one embodiment of this invention, after the time delay allowed for orifice cleansing, an annular section of the diaphragm is forced against an annular seat having an irregular opposing surface to provide a controlled seepage of fluid between the diaphragm and annular seat surrounding the outlet leading to the valve orifices. In another embodiment, the diaphragm is so supported that the fluid pressure causes it to vibrate, thus ensuring continual cleaning action.

3,693,889
FUEL INJECTION NOZZLE

Gregor Schuster, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 4, 1971, Ser. No. 169,030
Claims priority, application Germany, Aug. 4, 1970, P 20 38 643.0
Int. Cl. B05b *1/30*
U.S. Cl. 239—533 **5 Claims**

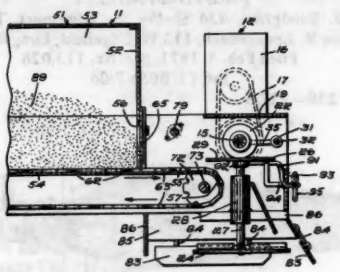
In a fuel injection nozzle, for varying the fuel quantities injected thereby, there is provided a movable throttle member which determines the flow passage section of a bypass or return channel provided in the fuel injection nozzle. The position and thus the throttling effect of the throttle member is determined by the axial distance between two threadedly interengaging components of the fuel injection nozzle.



3,693,890
MATERIAL SPREADER ATTACHMENT FOR TRUCKS

Anthony J. Torrey, 874 Edgell Road, Framingham Center, Mass.

Filed July 2, 1970, Ser. No. 51,994
Int. Cl. A01c *17/00, 19/00*
U.S. Cl. 239—668 **12 Claims**



Disclosed is a material spreader attachment for mounting on the bed of a conventional truck. Particulate material retained in a hopper is moved by a conveyor onto a rotating distributor disc and discharged therefrom by centrifugal force. The distribution disc is driven by a friction wheel in turn rotated by a constant speed engine also used to drive the material conveyor. Longitudinal adjustment of the friction wheel along its rotational axis alters the speed transmission ratio to the distribution disc and thereby controls the material discharge pattern. By utilizing an independent constant speed engine to drive both the conveyor and the adjustable friction wheel, a selective material discharge pattern can be maintained regardless of the speed at which the supporting vehicle moves.

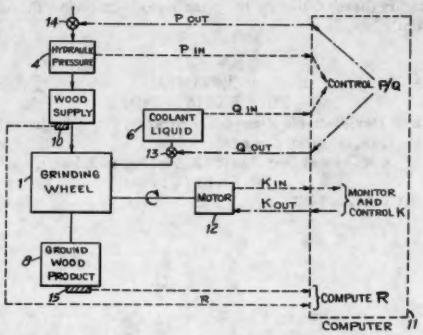
3,693,891
WOOD GRINDING

Norton S. Remmer, 98 Coolidge Road, Worcester, Mass.

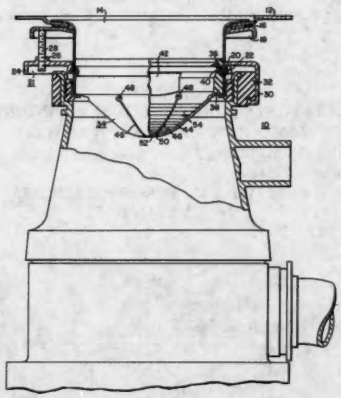
Filed June 24, 1971, Ser. No. 156,328
Int. Cl. B02c *25/00*
U.S. Cl. 241—15 **37 Claims**

The invention is concerned with the grinding of wood, and in particular to the production of wood pulp in the paper-making industry. The invention provides a method for the grinding of wood which includes the steps of: (a) urging wood against a grinding surface which is adapted for rotation by a source of power, (b) applying to the grinding surface a flow of cooling liquid, (c) maintaining the ratio of the pressure of the wood

against the grinding surface to the rate of flow of coolant liquid at a substantially constant value, and (d) maintaining the energy supplied by the source of power per unit weight of ground wood produced at a substantially constant level. The invention also contemplates the provision of apparatus for the grinding of wood which comprises: (a) a grinding surface adapted to be rotated by a source of power, (b) means for urging wood against the grinding surface, (c) means for applying to the grinding surface a flow of cooling liquid, (d) means for maintaining the ratio of the pressure of the wood against the grinding surface to the rate of flow of coolant liquid at a substantially constant value, and (e) means for maintaining the energy supplied by the source of power per unit weight of ground wood produced at a substantially constant level.

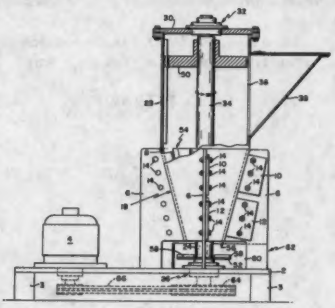


3,693,892
DISPOSER SPLASH GUARD
Raiq S. Musa, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed July 8, 1971, Ser. No. 160,592
Int. Cl. B02c *23/02, 18/42*
U.S. Cl. 241—100.5 **8 Claims**



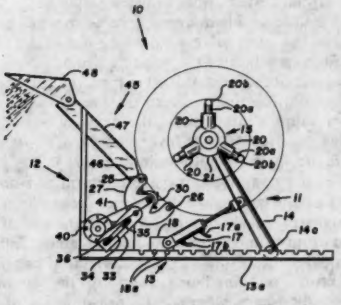
The invention provides a splash guard for use in a food disposer, with the same situated in a kitchen sink and providing the means through which the housewife passes food waste to the food disposer, proper. The splash guard is made of an elastomer material having a series of split segments, each having the general configuration of a sector of a circle or triangle and providing, in totality, the splash guard section. The elastomer material insures that there is no tendency for food being comminuted to kick back upwardly into the sink area. Further, the elastomer material also provides a sound attenuating and sound barrier means to prevent noise which is generated by the comminution of food waste from passing outwardly through the sink opening. In accordance with the principles of the invention, in order to provide sufficient rigidity to the elastomer material and prevent kickback and provide a sound barrier, each of the portions of the elastomer material includes a series of relief portions on its upper face, with these relief portions so formed that they tend to come together if the elastomer material is urged upwardly. At the same time, bending of the elastomer material downwardly, such as would be done in placing of food waste within the food disposer, tends to move the relieved portions further apart. Thus, the effective cross sectional area of elastomer material, through which bending takes place, is increased for upward bending and decreased for downward bending.

3,693,893
GRANULATOR
John W. McIntyre, 17 Mechanic St., Attleboro, Mass.
Filed Jan. 14, 1971, Ser. No. 106,433
Int. Cl. B02c *13/18*
U.S. Cl. 241—258 **7 Claims**



Apparatus for granulating materials, having fly knives on a vertical rotor which cooperate with vertical stationary knives within a cone-shaped cutting chamber, the rotor being spaced from the wall of the chamber a greater distance at the top thereof than at the bottom, so that the entrance at the top of the chamber for material is larger than the exit throat at the bottom of the chamber, and both the stationary and fly knives extend into the cutting chamber further at the top thereof than at the bottom.

3,693,894
TIRE SHREDDER
Raymond W. Willette, 923 Dodd Road, St. Paul, Minn.
Filed Nov. 30, 1970, Ser. No. 93,558
Int. Cl. B02c *18/06*
U.S. Cl. 241—279 **4 Claims**



A device directed to shredding rubber tires and the like including a tire holding member for gripping the interior bead of

various sized tires with means for rotating said member, a rotating cutting member for engaging the exterior of the tires and cutting the same into relatively small particles and means for transporting the particles from the cutting member. The unit includes means for properly feeding the tires into the cutting member with means for properly positioning the cutter member for proper cutting of the tire such that various sized tires may be shreded including the sidewalls thereof.

3,693,895

Patent Not Issued For This Number

3,693,896

APPARATUS FOR WINDING STRANDS OF THERMOPLASTIC MATERIAL, PARTICULARLY OF GLASS FILAMENTS IN THE COURSE OF THEIR PRODUCTION

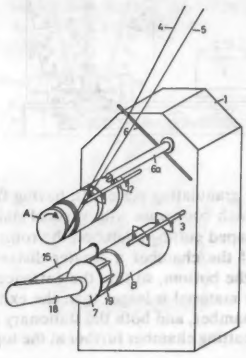
Wilhelm Brauweiler, Eilendorf, and Gunther Winand Mager, Stolberg, both of Germany, assignors to Compagnie De Saint-Gobain-Pont-A-Mousson, Neuilly-sur-Seine, France

Filed Aug. 17, 1970, Ser. No. 64,358

Claims priority, application France, Aug. 22, 1969, 6928825

Int. Cl. B65h *54/02*

U.S. Cl. 242—18 A **6 Claims**



A winding apparatus for newly formed strands of thermoplastic material, constituted by filaments issuing from a plurality of spinning nozzles of a spinneret containing said material in liquid form, such as molten glass, disposed below the latter. Two winding drums on fixed axes extend in parallel to each other in a plane inclined to the horizontal, onto which are adapted to be mounted empty spools, and with which cooperate strand traverse mechanisms which serve to lay up the strands on the spools in crossing relation while the rotary movement of the latter effects a drawing-out of the filaments. The specific disposition of the winding drums permits a convenient transfer of the strands issuing from the spinneret, from the filled bobbins on one drum to the empty bobbins on the other drum without interrupting the drawing-out of the filaments. This transfer may be executed in a non-automatic, semi-automatic, or fully automatic manner. In the last-mentioned case, the completion of a predetermined number of revolutions of the active winding drum, automatically positions an auxiliary rotary winding cage onto the end of the last-mentioned drum by means of a pivotal movement followed by an axial movement of the cage. A deflecting bar shifts the strands from the bobbins being wound on the winding drum onto the winding cage whereat the drawing out of the filaments continues. The rotary cage is then moved axially from the end of the active winding drum, rotated into coaxial position with the heretofore idle winding drum and axially shifted onto the end thereof, without any interruption of the drawing out of the filaments. When the last-mentioned drum reaches its proper rotary speed, the strands are moved back from the winding cage to their winding positions governed by the strand traverse device associated with the last-mentioned drum, for filling up the spools which had been mounted on the last-mentioned drum. The first drum is braked, unloaded and charged with empty spools in readiness for the next transfer of the strands thereto, during the winding operation on the second drum.

3,693,897

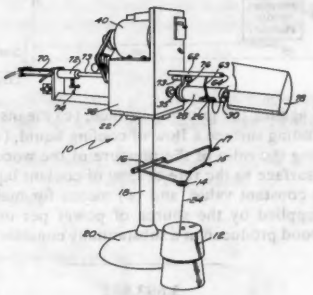
PULL SKEIN WINDER

Miron Davidson, c/o Russell A. Edwards, Esq. 56 Ainslie Street N., Galt, Ontario, Canada

Filed Dec. 30, 1972, Ser. No. 102,864

Int. Cl. B65h *54/02*

U.S. Cl. 242—18 R **4 Claims**



An electro-mechanical pull skein winder which automatically and sequentially operates 1) the winding mechanism that winds you on a spindle, 2) the doffing means that pushes the wound skein off the spindle, 3) the clamping means that grip the tail end of the skein of yarn just doffed, 4) the cutting means that severs the wound skein from the continuous length of yarn and 5) the ejecting means that deposit the skein at a particular point, and then automatically starts the cycle over again.

3,693,898

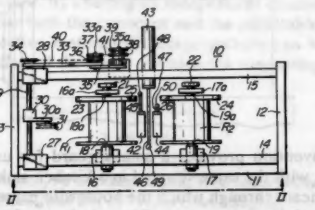
APPARATUS FOR CONTINUOUSLY WINDING UP A LINEAR PRODUCT SUCH AS WIRE

Yashuhiko Otani, Kobe, Japan, assignor to Kobe Steel, Ltd., Kobe-shi, Japan

Filed March 18, 1970, Ser. No. 20,755

Int. Cl. B65h *54/02*

U.S. Cl. 242—25 A **3 Claims**



A continuous take-up apparatus for wire having upright reel supporting frames rigidly mounted on a base. A sheave is provided above the take-up reels to guide the wire to one of the reels. A plurality of upwardly extending rods are provided and are movable between the reels axially thereof so as to shift the wire beyond one ends of the reels when said one reel has

become almost full of the wire. Discs are rotatably mounted adjacent said one ends of the reels. The discs have claws which engage the thus shifted wire and arrest it on the discs whereby the wire is cut between the claws. The cut end of the wire arrested on the disc associated with the other empty reel causes a further continuous length of the wire to be wound up on the empty reel for thereby completing transfer of the wire from the full reel to the empty one.

3,693,899

THREAD GUIDING MEANS FOR YARN WINDING

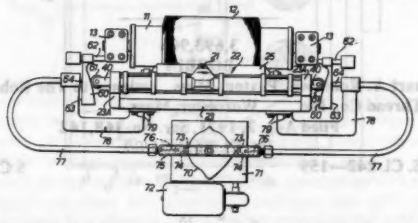
John Leslie Burgess, Penzance, Cornwall, and Joseph Eric Harvey, Camborne, Cornwall, both of England, assignors to Maxam Power Limited, Camborne, Cornwall, England

Filed Aug. 19, 1970, Ser. No. 65,296

Claims priority, application Great Britain, June 22, 1970, 30,207/70

Int. Cl. B65h *54/28*

U.S. Cl. 242—43 **14 Claims**



A thread guide for a yarn winding machine, which comprises a reciprocating shuttle slidably mounted on a fixed track and means for subjecting the shuttle to timed blasts of compressed air to cause its reciprocating movement along the track. The shuttle is a double-acting cylinder member having opposed open-ended cylinders which cooperate with fixed pistons mounted in adjustable positions at opposite ends of the track. The fixed pistons contain poppet valves arranged to be actuated by the engagement of the shuttle with their actuating members at the ends of the reciprocating movements of the shuttle along the track. Each actuating member protrudes from the crown of one of the fixed pistons for engagement by the end wall of the opposed cylinder of the shuttle and when so engaged opens the valve to deliver a blast of compressed air into the cylinder to propel the shuttle in the reverse direction along the track.

3,693,900

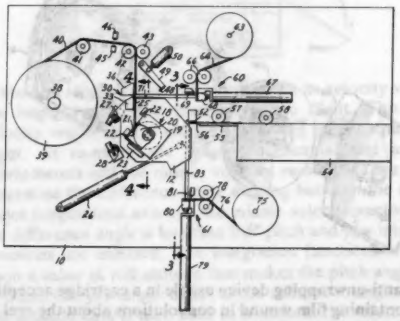
FILM CARTRIDGE LOADER

Arlin L. Bohn, Blaine, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed April 7, 1971, Ser. No. 131,876

Int. Cl. B65h *19/20*

U.S. Cl. 242—56 R **5 Claims**



Apparatus for automatically loading a length of film into a cartridge having a rotatable reel disposed within the cartridge shell. The film is fed from a supply, its free end is connected to the cartridge reel at a first station and the cartridge reel is driven to wind a predetermined length of film onto the reel. The film is severed between the supply and the cartridge so that a free film end extends from the cartridge. The cartridge is then moved to a second station at which the free film end is spliced to one end of a film leader. The film and a major portion of the leader are then wound into the cartridge.

3,693,901

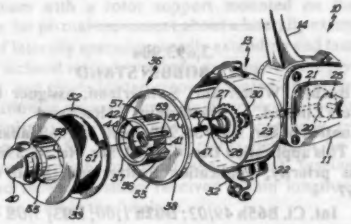
QUICK-CHANGE CARTRIDGE SPOOL

Larry L. Lilland, and James T. Rumbaugh, both of Spirit Lake, Iowa, assignors to Berkley & Company, Inc., Spirit Lake, Iowa

Continuation-in-part of Ser. No. 727,832, May 9, 1968, abandoned. This application Nov. 1, 1968, Ser. No. 778,913

Int. Cl. A01k *89/00*

U.S. Cl. 242—84.2 R **5 Claims**



An adapting arbor for use in combination with a spinning reel having a housing, a spindle or shaft mounted within said housing, and means for rotating a line engaging bail device relative to said shaft, with the line engaging means being arranged for axial rotation within said housing. The adapting arbor is arranged for receiving a line spool and consists of a boss with a flange disposed rearwardly of the boss, and is arranged to be universally received along the spindle or shaft of a wide variety of reel devices and is also adapted to receive and releasably retain a line-receiving spool thereon. The boss of the arbor preferably has a keyway along one surface and the flange portion preferably has a locking lug to engage the spool, the spool having a locking key formed along the inner portion of the center sleeve and a lug-receiving bore formed on the rear flange. The outer periphery of the boss has a plurality of pads to engage the interior of the spool, each pad comprising a resilient member protruding from the surface of the boss to provide firm contact with the core of the spool. In addition, drag brake means are provided for mounting along the core of the arbor for controlling relative rotation between the spindle and the line spool.

3,693,902

Patent Not Issued For This Number

3,693,903

WIRE REEL FOR A COIL OF WIRE

Carlis E. Cassel, and Donald S. Krueger, both of Niles, Mich., assignors to National-Standard Company, Niles, Mich.

Continuation of Ser. No. 60,294, Aug. 3, 1970, abandoned. This application Aug. 19, 1971, Ser. No. 173,232

Int. Cl. B65h *49/00*

U.S. Cl. 242—129.8 **5 Claims**

A wire reel formed from a length of wire to provide opposed axially spaced apart reel sides and a core, each side being defined by the formation in the wire of circumferentially

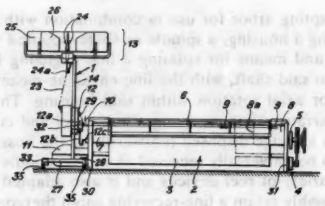
spaced apart radially outwardly extending side projections, with successive side projections at each side of the reel being connected by circumferentially extending connecting side

portions, and in which the core is defined by diagonal cross-over portions extending between axially opposed side projections.

3,693,904
WEFT BOBBIN STAND

Robert Bucher, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Continuation of Ser. No. 756,900, Sept. 3, 1968, abandoned. This application Dec. 4, 1970, Ser. No. 95,396
Claims priority, application Switzerland, Sept. 6, 1967, 12479/67
Int. Cl. B65h *49/02*; D02h *1/00*; D03j *5/08*
U.S. Cl. 242—131 **3 Claims**



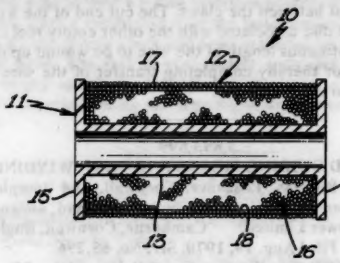
There is disclosed, for use with looms in which the weft supply remains outside the shed, a wheeled weft bobbin stand including a weft bobbin creel, weft thread brakes, and intermediate weft thread storage devices.

3,693,905
DISPLAY FOR FILAMENTARY PRODUCT WITH MUTUALLY ADJACENT SEGMENTS HAVING CONTRASTING COLORS

Paul C. Johnson, Spirit Lake, Iowa, assignor to Berkley & Company Inc., Spirit Lake, Iowa

Filed July 26, 1971, Ser. No. 166,133
Int. Cl. B65h *55/00*
U.S. Cl. 242—159 **4 Claims**

Means for winding and displaying a portion of a continuous elongated translucent filament with mutually adjacent segments having contrasting colors upon the core of a laterally flanged spool structure comprising winding an initial predetermined portion of the elongated filament upon the core to a substantially completed extent of fill, and then enveloping the outer cylindrical surface of said substantially completely filled spool with an opaque film having a highly reflective outer surface. Thereafter, the winding of the elongated filament is continued, with the filament being wound helically about the outer surface of the opaque film until the core surface between the inner opposed surfaces of the lateral flanges is

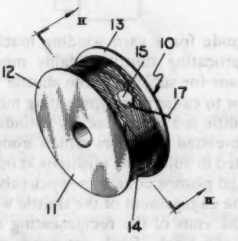


substantially covered with a single winding layer only of the elongated filament, thus presenting striations of contrasting color between the inner surfaces of the lateral flanges.

3,693,906
BOBBIN

Stuart A. Robinson, Paxton, Mass., assignor to The Robinson Thread Co., Inc., Worcester, Mass.

Filed Aug. 2, 1971, Ser. No. 168,142
Int. Cl. B65h *55/00*
U.S. Cl. 242—159 **5 Claims**

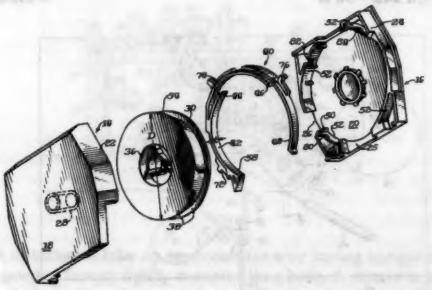


A bobbin in which the free end of a coil of thread is held in place by a body of thermoplastic material.

3,693,907
FILM CONVOLUTION RETAINING DEVICE

Edward R. Prelletz, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Feb. 2, 1970, Ser. No. 7,715
Int. Cl. G11b *23/04*
U.S. Cl. 242—197 **24 Claims**



An anti-unwrapping device usable in a cartridge accepting a reel containing film wound in convolutions about the reel hub, the outer film convolutions having a tendency to unwrap, the

device having a base member from which a plurality of yieldable fingers extend with the free ends thereof arranged to engage the outermost convolution of the film.

3,693,908

ANTI-VIBRATION DEVICE FOR TAPE TRANSPORTS

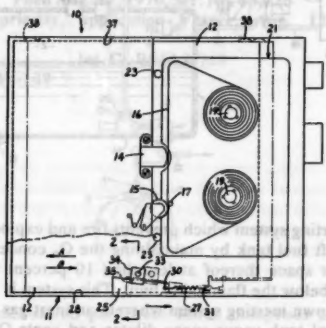
Theophiel Clement Jozef Lodewijk Staar, Kraainem, Belgium, assignor to Starr, S. A., Brussels, Belgium

Filed March 10, 1971, Ser. No. 122,694

Claims priority, application Belgium, March 13, 1970, 86,368

Int. Cl. G03b *1/04*; G11b *15/32, 23/04*

U.S. Cl. 242—198 6 Claims



An anti-vibration device for a tape deck of the type having a main frame and a movable plate carrying the tape transport elements. The movable plate is restrained from vibrating against the supporting main frame by a wedge held resiliently between the plate and frame and engageable with the plate through a pivotably supported bearing member having a wedge retaining groove therein.

3,693,909

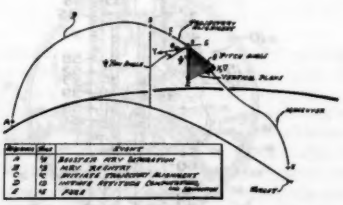
GUIDED MISSILE TRAJECTORY ALIGNMENT METHOD

James R. Hall, St. Charles, Mo., assignor to The United States of America as represented by the Secretary of the United States Air Force

Filed Feb. 18, 1970, Ser. No. 14,825

Int. Cl. F41g *7/00, 9/00, 11/00*

U.S. Cl. 244—3.2 1 Claim



Method aligning a guided missile with its velocity vector at the beginning of post exoatmospheric flight. This missile velocity vector data is established during preexoatmospheric flight. At re-entry, the outputs of normal and axial accelerometers and the missile velocity vector data are used to determine the difference angle existing between the missile's major longitudinal axis and the missile velocity vector. When the difference angle is less than 0.5° pitch and yaw integration functions are initiated. The integration functions are based upon a value of roll attitude that makes the pitch angle equal to 0 and the yaw angle equal to the difference angle. System roll attitude data is then used to transform the reference to a frame in which the local horizontal frame is known.

3,693,910

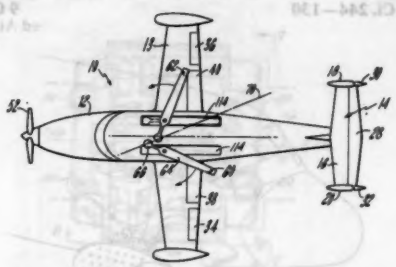
AIRCRAFT ROTOR BLADE MECHANISM

Angelo J. Aldi, 190 Brook Lane, Cheshire, Conn.

Filed Dec. 14, 1970, Ser. No. 97,508

Int. Cl. B64c *27/22*

U.S. Cl. 244—7 A 12 Claims



A STOL aircraft having a fixed wing and a rotor blade mechanism with a rotor support mounted on the aircraft fuselage for pivotal movement about a laterally extending axis, a pair of laterally spaced upwardly extending and laterally outwardly inclined rotor drive shafts mounted on the pivotal rotor support, and single bladed rotors mounted on the drive shafts for rotation in opposite angular directions in noninterfering synchronism. The rotor drive shafts comprise telescoping shaft portions for shifting the rotors between an extended operating position overhead the aircraft fuselage and a retracted stowed position received within longitudinally extending pockets in the fuselage.

3,693,911

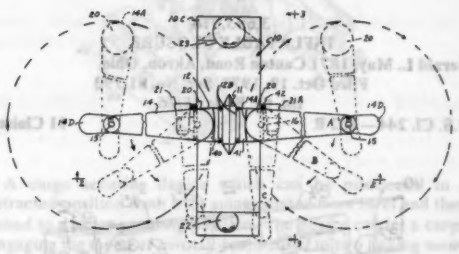
AIRCRAFT FOR VERTICAL FLIGHT AND TRANSITION TO AND FROM HORIZONTAL FLIGHT

Henry S. Bacon, 745 W. Front St., Red Bank, N.J.

Continuation-in-part of Ser. No. 51,601, July 1, 1970, abandoned. This application Oct. 18, 1971, Ser. No. 190,076

Int. Cl. B64c *27/22*

U.S. Cl. 244—7 A 21 Claims

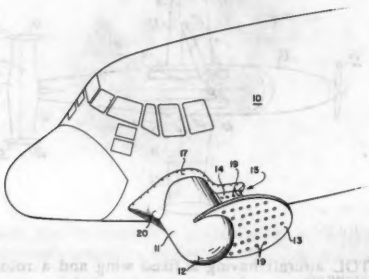


This invention is particularly concerned with an aircraft capable of both horizontal and vertical flight and at any required angle and supported by powered wing-rotors that are rotationally synchronized for stability while producing a desired vertical lift as the aircraft ascends and is propelled forward by means of auxiliary engines, and in addition, means are provided to convert said wing-rotors into stationary wing airfoils for normal horizontal flight at greater speed and reconversion to wing-rotors for vertical landing.

3,693,912

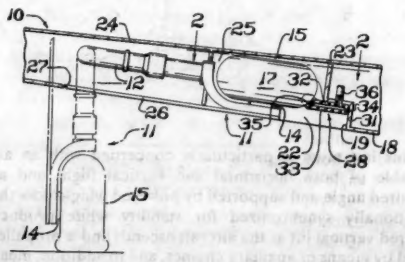
Patent Not Issued For This Number

3,693,913
FLUID FLOW CONTROL DEVICE
Edwin S. Barland, Sr.; Joseph J. Cornish, III, and Grady B. Henrich, all of Marietta, Ga., assignors to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Aug. 24, 1970, Ser. No. 66,301
Int. Cl. B64c 7/00
U.S. Cl. 244—130 9 Claims



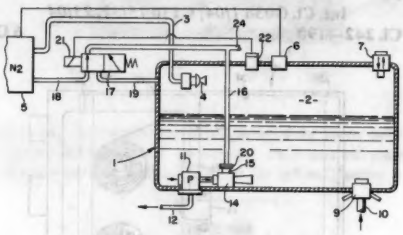
A fluid flow control device deals with undesirable aerodynamic characteristics associated with cylinder-plus-hemisphere shaped airborne radar housings when positioned in a generally lateral projecting location from an aircraft. The device consists of a rectangular plate mounted horizontally to the downstream side of the housing and extending radially from the fuselage and an end plate mounted perpendicular to the first plate. This end plate has an upstream edge that conforms to the cylindrical portion of the housing adjacent the outer end thereof and extends downstream a distance equal to about one and one-fourth times the diameter of the cylindrical housing. The width of this end plate is at least equal to the diameter of the cylindrical housing. Vortices that shed in the streamwise direction from the housing are entrained by the end plate/horizontal plate channel while the air flow over the hemispherical end of the housing is prevented from mixing with these shedded vortices resulting in substantially eliminating aircraft drag and buffeting. The plates contain perforations which serve to neutralize any destabilizing influences that may result due to the mounting of the device on the aircraft.

3,693,914
INFLATABLE CLOSURE
Gerald L. May, 1871 Canton Road, Akron, Ohio
Filed Oct. 19, 1970, Ser. No. 81,793
Int. Cl. B64c 25/16
U.S. Cl. 244—102 R 11 Claims



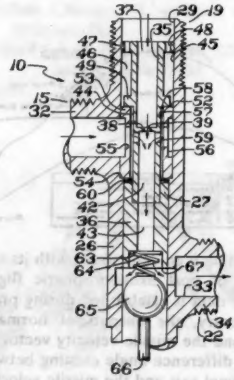
An inflatable cover of fabric reinforced resilient elastomeric material having overlapping, flat walls in the deflated condition. A portion of one of the walls is fixedly attached to a support and upon inflation of the cover the fabric reinforced walls expand and swell around the attached portion drawing the other portions of the walls toward the attached portion to an uncovered condition in opposition to the resiliency of the elastomeric material which returns the walls to the covered flat condition upon deflation of the cover.

3,693,915
INERTING SYSTEM FOR FUEL TANKS AND THE LIKE
Jack M. Ulanovsky, Newport Beach, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Jan. 28, 1971, Ser. No. 110,536
Int. Cl. B64d 37/00
U.S. Cl. 244—135 R 14 Claims



An inerting system which prevents fire and explosion within an aircraft fuel tank by maintaining the O_2 concentration in the vapor space thereof at less than 10 percent by volume which is below the flammable limit. This system is in addition to the known inerting system wherein an inert gas such as N_2 in the fuel tank vapor space dilutes and vents O_2 liberated from the fuel as during ascent of the aircraft and pressurizes the tank a during descent of the aircraft to prevent entry of air. The present inerting system contemplates scrubbing of the fuel in the tank during flight of the aircraft by circulating the fuel through a mixing nozzle having its suction port communicated with a source of supply of inert gas such as N_2 thus to liberate O_2 dissolved in the fuel for venting through the tank vent.

3,693,916
VALVE MECHANISM FOR ICE REMOVAL SYSTEM
Paul G. Tritt, 4666 Roop Ave., Barberton, Ohio, and Michael J. Buza, 2371 Woodpark Road, Akron, Ohio
Filed Oct. 29, 1970, Ser. No. 85,086
Int. Cl. B64d 15/16
U.S. Cl. 244—134 A 7 Claims



A valve having inlet, outlet and exhaust ports for inflating and evacuating air from pneumatic ice removal tubes in which air is evacuated from the tubes through an exhaust port while

a reduced amount of high pressure air from the inlet port is directed through an orifice to provide subambient pressure in the tubes in the deflated condition. High pressure air is rapidly injected into the tubes through the above-mentioned orifice supplemented by an additional valve opening provided by movement of a valve sleeve in response to closing of the exhaust port of the valve.

3,693,917

PARACHUTES

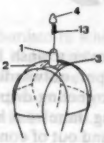
Henri Collec, 92-Meudon-la-Foret, France, assignor to Aerazur Constructions Aeronautiques Societe Anomyme, Issy-les Mouline-aux, France

Filed Aug. 12, 1970, Ser. No. 63,225

Claims priority, application France, Aug. 12, 1969, 6927750

Int. Cl. B64d *17/68*

U.S. Cl. 244—149 **7 Claims**



A container-stored parachute which comprises a tubular member consisting of a slightly porous material and a cable system to connect the extractor device with the canopy of the parachute, the tubular member and cable system constituting a protection device which, when inflated by air upon unfurling of the parachute, keeps away the extractor device so as to prevent it from damaging the canopy of the parachute.

3,693,918

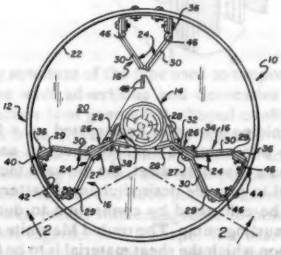
SUPPORT OR STAND FOR TREES

James E. Fisher; Jack L. Mitchell, and Gerald F. Wisdom, all of Sterling, Colo., assignors to Tiger Products, Inc., Sterling, Colo.

Continuation-in-part of Ser. No. 783,871, Dec. 16, 1968, abandoned. This application July 29, 1970, Ser. No. 59,162

Int. Cl. A47g *33/12*

U.S. Cl. 248—46 **9 Claims**



A tree support or stand of the general type employing a trunk watering container, a base member engaging the bottom of the tree trunk, trunk engaging jaws pivoted to the container, and pivoted links extending between the base member and the trunk engaging jaws, characterized by a construction in which the water in the container is distributed to provide optimum stability with minimum height, and economies of manufacture are effected through use of identical reversible and simplified parts which reduce costs of manufacturing equipment, such as dies, and reduction of scrap material and assembly time.

3,693,919

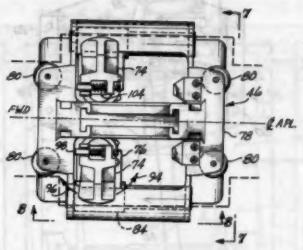
CARGO HANDLING SYSTEM AUTOMATIC CENTER

John Alberti, and Franz Weber, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 6, 1971, Ser. No. 140,773

Int. Cl. B61d *45/00*

U.S. Cl. 248—119 R **7 Claims**



A cargo handling system for carriers but specifically for aircraft incorporating an automatic guide and restraint device which is utilized in cooperation with a side manually adjustable fore/aft locking device with a slaved vertical restraint device.

3,693,920

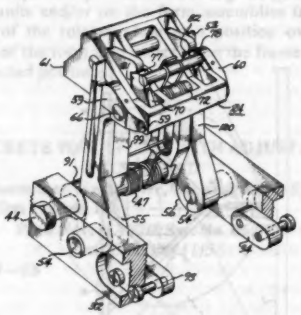
RETRACTABLE CARGO SECURING DEVICE

Robert D. Trautman, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 9, 1970, Ser. No. 96,393

Int. Cl. B65d *45/00*; B61d *45/00*

U.S. Cl. 248—119 R **5 Claims**



A cargo securing device which can be positioned in a retracted position flush with an associated floor level and then raised to a cargo securing position. The device carries a cargo engaging lug member pivotally connected to two linking members which are swing mounted to the cargo securing device base frame.

3,693,921

QUICK RELEASE MOUNTING APPARATUS

George J. Beaucher, Anaheim, Calif., assignor to The United States of America as represented by the Secretary of the Navy

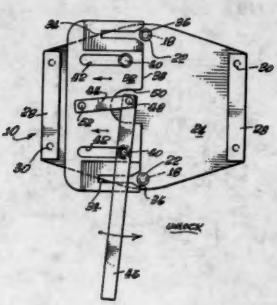
Filed Oct. 26, 1970, Ser. No. 84,030

Int. Cl. A47g *29/00*

U.S. Cl. 248—187 **11 Claims**

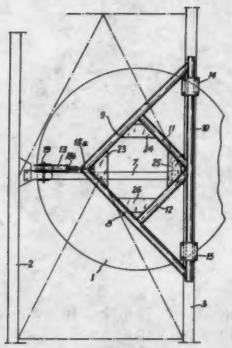
A quick release mounting apparatus for mounting a device, such as a TV camera, to a support which has a pair of laterally spaced upstanding members comprising: a base plate adapted to rest upon said support and having a pair of apertures for receiving the upstanding members; a plate adapted to slidably

rest on the base plate; means for guiding fore and aft movements of the slidable plate on the base plate; the slidable plate having a pair of fore and aft laterally spaced slots for receiving the upstanding members and wedging with said members to



lock the base plate to the support when the slidable plate is slid in one direction and unlocking the base plate from the support when the slidable plate is slid in an opposite direction; and lever means pivoted to the slidable plate and the base plate for sliding the slidable plate in fore and aft directions.

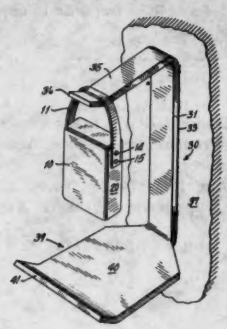
3,693,922
SUPPORT FOR ANTENNA DEVICE
Michel M. F. Gueguen, 78 Saint-nom-la-Breteche, France
Filed March 2, 1970, Ser. No. 15,786
Int. Cl. E04h *12/08*
U.S. Cl. 248—221 **2 Claims**



A support comprising a triangular frame pivotally mounted on a tower for supporting an antenna or reflector and means for locking said frame in an adjusted position.

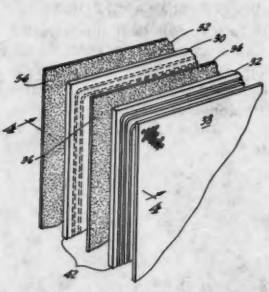
3,693,923
SUSPENSION DEVICE FOR A CAKE OF SOAP
Theodore A. Ayoub, 10 Lenox Ave., Pompton Lakes, N.J., and Alfred Ayoub, 91 Wilson Ave., Preakness, N.J.
Filed April 16, 1970, Ser. No. 29,182
Int. Cl. F16m *13/02*
U.S. Cl. 248—360 **5 Claims**

The present invention provides a suspension device for a cake of soap in the form of an elongated, flexible, polyethylene molded strip, which has pin engaging apertures at its outer ends and collars formed integrally therewith, and pins or inserts of acrylic resin for engaging in said apertures and for insertion into the side faces of the soap cake for retaining said cake soap and suspension loop in relative non-rotational position; and a wall bracket of polymerized methylmethacrylate having an upright portion adapted to be adhe-



sively attached to a wall over a wash basin or the like, such wall bracket having an upper, outwardly projecting hook arm and a lower, outwardly projecting drip pan, such hook when the suspension loop is hung therefrom holding such soap cake over said drip pan, in air, and out of contact with a moisture or water collecting vessel or surface.

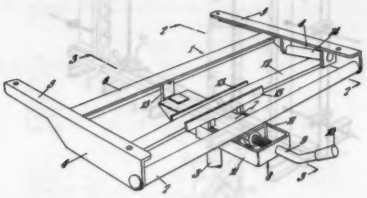
3,693,924
PLATEN FOR VACUUM HOLDING OF SHEET MATERIAL
Delbert T. Blatherwick, 726 Camino Grove Ave., Arcadia, Calif.
Filed June 7, 1971, Ser. No. 150,388
Int. Cl. F16b *47/00*; G03b *27/60*
U.S. Cl. 248—363 **6 Claims**



A vacuum holding platen is constructed as a lamination comprised of a thin center aluminum sheet to each side of which is adhered a Masonite sheet, the outward face of which has been routed to provide desired channel patterns through which air may be exhausted by connection to ducts leading from an air exhausting pump. The routed Masonite on the side of the platen upon which the sheet material is to be held, is adhesively covered with a perforated sheet. The other Masonite sheet is similarly covered with an unperforated thin sheet of aluminum. All of the unperforated sheets are appropriately orificed to enable the channels to be selectively connected, depending upon the size of the film or other sheet material to be held by the platen, through a valve block, movably disposed on the back of the platen, to the air exhausting pump. The orificed metal sheets may be of aluminum and punched to provide perforations or passage orifices. The Masonite sheets are routed and all contacting surfaces of the sheets are coated with epoxy and compressed between granite blocks which are hydraulically separable to permit insertion in between them of

the sheets to be compressed and removal therefrom of the compressed platen.

3,693,925
TILTING CHAIR MECHANISM
Daniel Weinstein, 29 Middleway, London NW. 11, England
Filed Nov. 4, 1970, Ser. No. 86,827
Int. Cl. B60n 1/02
U.S. Cl. 248—378 **6 Claims**

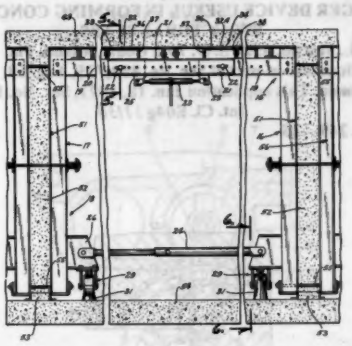


A tiltable chair mechanism in which a seat supporting portion of the chair frame is pivotable relative to the rest of the chair frame, the pivotal movement being cushioned by a leaf spring means acting between the seat supporting frame portion and the rest of the chair frame.

3,693,926
DISPLAY STRUCTURE
Frank L. Carter, Chicopee, Mass., assignor to Pioneer Packaging, Inc., Chicago, Ill.
Filed June 25, 1970, Ser. No. 49,860
Int. Cl. A47b 97/00
U.S. Cl. 248—460 **3 Claims**

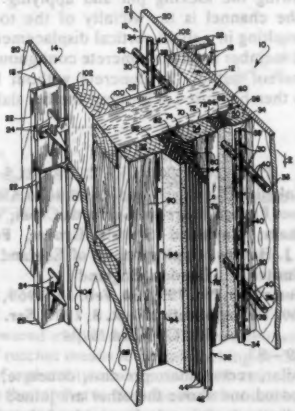
A display structure of the type used to support and highlight merchandise with advertising and decorative material. The display structure is of generally L-shaped configuration and is constructed from a sheet of plastic material vacuum molded into a base portion, an upstanding back portion, and a hinge portion connecting the base and back portions. Adjacent the hinge portion, the base and back portions have formed therein frictional catch means interengageable to hold the base and back portions together in a L-shape. The base and back portions each have a central display surface and four peripheral side walls. Two of the side walls extend from the hinge portion and substantially touch when the base and back portions are fastened together; the remaining side walls terminate in an outwardly extending flange connecting with the hinge portion. The frictional catch means are formed on the two side walls extending from the hinge, with a pair of protuberances formed on one wall being frictionally received in a pair of recesses provided in the other wall. The protuberances and recesses have parallel lateral walls perpendicular to the hinge line which frictionally engage, the protuberances each being provided with a raised portion which fits behind the opposite side wall and latches the base and back portions together.

3,693,927
RELEASE PLATE FOR A COLLAPSIBLE CULVERT FORM
Ralph L. Jennings, Des Moines, Iowa, assignor to Economy Forms Corporation, Des Moines, Iowa
Filed Feb. 24, 1970, Ser. No. 13,678
Int. Cl. B28b 7/30
U.S. Cl. 249—11 **2 Claims**



The form is used in the construction of box culverts or in buildings having linearly aligned rooms to provide for a progressive forming of the room side walls and ceiling. A pair of frame units are connected together for relative expansible and contractible movement and for vertical movement. A metal form assembly for laying the ceiling is supported on each frame unit, a first one of which assemblies carries a release plate that extends between the two form assemblies with its upper surface in the plane of the top surfaces of the form assemblies and its free end in abutting engagement with the second one of the form assemblies when the frame units are in their expanded positions. Coacting wedge members on the frame units and/or on the form assemblies facilitate the movement of the release plate to a position overlying the second one of the form assemblies when the frame units are in their contracted positions.

3,693,928
CONCRETE WALL FORM WITH ADJUSTABLE BULKHEAD
James C. Shoemaker, Hampshire, Ill., assignor to Synions Corporation, Des Plaines, Ill.
Filed Nov. 4, 1970, Ser. No. 86,729
Int. Cl. E04g 11/38
U.S. Cl. 249—18 **6 Claims**



A concrete wall form having an adjustable bulkhead in which a variety of bulkhead components cooperate with one

another in sealing relationship to exclude the passage of concrete past any reinforcing rods, water seals, conduits or other residual concrete-embedded members which traverse or bridge the interfacial surfaces between adjacent concrete pourings.

3,693,929

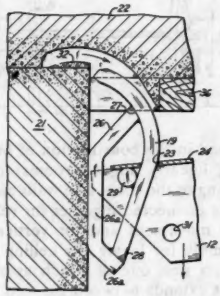
HANGER DEVICE USEFUL IN FORMING CONCRETE STRUCTURAL SLABS

Sidney L. Martin, 6520 S.W. 79th Court, Miami, Fla.

Continuation-in-part of Ser. No. 850,735, Aug. 18, 1969, abandoned. This application Jan. 18, 1971, Ser. No. 107,059

Int. Cl. E04g *11/38*

U.S. Cl. 249—25 **5 Claims**



A hanger device useful in conjunction with temporary decking or forms for pouring concrete structural slabs, such as roofs or floors, is constructed of a channel bearing a curved, pivoting tongue-shaped member. The channel is adapted to hold a joist for supporting the temporary decks on which the concrete is poured. The tongue-shaped member protrudes upwardly through a slot in the top of the channel and rests at its downwardly curved end on a preformed support, such as a joist or beam. Rotational movement of the tongue-shaped member is prevented by a locking pin cooperating therewith. In forming the slab, the poured concrete covers the protruding portion of the tongue-shaped member, the preformed support and the form decking. After hardening of the concrete, the hanger device carrying the supporting joist is readily removed by withdrawing the locking pin and applying a downward force on the channel is the vicinity of the tongue shaped member, resulting in a slight vertical displacement of the tongue-shaped member from the concrete contiguous thereto and rotation thereof out of the concrete without binding. The device may then be reused in forming another slab.

3,693,930

PRE-CAST CONCRETE PANELS

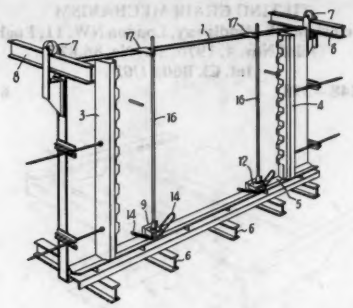
Norman Wakefield, Leatherhead; Stuart John Alexander, London; James Francis Morrish, Gerrards Cross; William Beck, Warlingham; Raymond Sturgis Groves, Fetcham, and Michael J. Harvey, Orpington, all of England, assignors to Wates Limited, London, England

Division of Ser. No. 799,164, Feb. 14, 1969, Pat. No. 3,566,560. This application Sept. 8, 1970, Ser. No. 70,436

Int. Cl. B22d *19/04*

U.S. Cl. 249—83 **7 Claims**

Two similar, rectangular, pre-cast, concrete, vertical wall panels disposed one above the other are joined together by a joint including a horizontal plate and a vertical attachment bar. The plate is the bottom wall of a short tube extending widthwise of the lower horizontal edge of the upper panel and is anchored in this panel by means of two oblique anchoring members fixed to the plate and embedded in the panel. The bar is embedded in the lower panel and its upper end zone



projects through a central aperture in the plate. A nut screwed on this zone bears downwardly on the plate via a radially slotted washer.

3,693,931

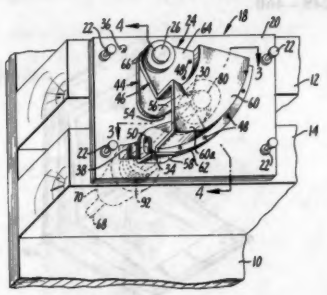
APPARATUS FOR CONSTRUCTING CONCRETE FORMS

Jack A. Holt, San Bruno, Calif., assignor to Burke Concrete Accessories, Inc., Burlingame, Calif.

Continuation-in-part of Ser. No. 683,558, Nov. 16, 1967, abandoned. This application April 30, 1969, Ser. No. 824,359

Int. Cl. E04g *17/08*

U.S. Cl. 249—219 W **3 Claims**

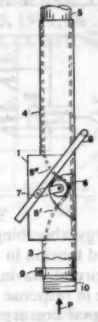


An apparatus for constructing a concrete form comprised of a pair of form panels arranged in opposed spaced relationship and secured against movement relative to each other by tie rods extending therebetween. The apparatus comprises conical grouting cores secured to the panels independently of the rods to slidably receive the rods and permit their extension through the panels from the outer side of one of the panels, and waler brackets mounted on each of the panels for selective gripping engagement with the ends of the rods to prevent movement of the panels toward and away from each other. The brackets are provided with hinged jaw-like elements which are movable to effect selective engagement and disengagement of the brackets with the rods. When disengaged, these elements permit free slidable movement of the rods relative to the brackets. The method is directed to the construction of a concrete form by a "feed through system" wherein tie rods are fed through a pair of opposed panels and grouting cores secured thereto from the outer side of one of the panels. In the method, once the rods are fed through the panels, they are secured against axial movement relative thereto to maintain the panels in opposed spaced relationship.

In an alternative embodiment, the apparatus is concerned with an arrangement wherein bushing inserts are secured to the panels in place of the conical grouting cores and cores or

other sealing elements carried by the tie rods are cooperable with these inserts.

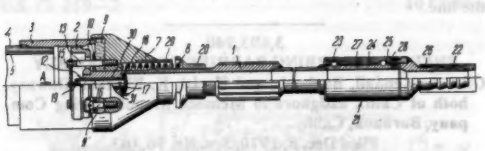
3,693,932
COMPRESSIBLE TUBE VALVE
William A. Blohm, 34 Azalea Court, Plainview, N.Y.
Filed Dec. 9, 1970, Ser. No. 96,368
Int. Cl. F16k 7/06
U.S. Cl. 251—6 1 Claim



A valve for pressurized fluent material incorporating a safety shield for the operator. A piece of compressible tubing is mounted in a box safety shield which is open on one side. A roller is mounted on an arm which is operated by a handle mounted on the protected side of the safety shield. The roller is positioned slightly off center in the closed position so that it is locked in closed position by pressure within said tubing.

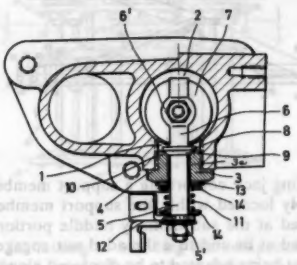
3,693,933
Patent Not Issued For This Number

3,693,934
VALVE MECHANISM
Mansur Abdullovich Zalyaliev, ulitsa Shevchenko, 53, kv. 43; Khalim Akhmetovich Asfandiyarov, ulitsa Tukaeva, 73a, kv. 48; Yakov Fedorovich Gubarev, ulitsa Gogolya, 51, kv. 8, and Filipp Grigorievich Arzamastsev, ulitsa Shevchenko, 55, kv. 48, all of Bugulma Tatarskoi ASSR, U.S.S.R.
Filed May 1, 1970, Ser. No. 33,740
Int. Cl. F16l 29/00
U.S. Cl. 251—149.5 3 Claims



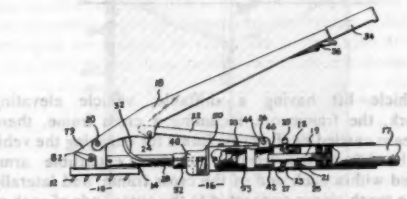
A valve mechanism for supplying pressurized gas into a pipe and controlling pressure therein in the process of vitrification thereof, used preferably at oil extraction, comprising a pipe branch being connected to a hose for supplying pressurized gas, the pipe branch having a member for a connection to the pipe; a spring loaded cap seated on the pipe branch, the cap sealing the joint of the pipe branch to the pipe, and a valve shutting off the discharge of the pressurized gas from the device when disconnecting from the pipe as well as a pivot mechanism arranged between the pipe branch and the hose, the pivot mechanism preventing the twisting of the hose.

3,693,935
THROTTLE VALVE MOUNTING FOR EXHAUST GAS LINE
Peter Thauer, Neuhaus, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany
Filed Jan. 13, 1971, Ser. No. 97,415
Claims priority, application Germany, Feb. 4, 1970, P 20 04 990.5
Int. Cl. F16k 1/22
U.S. Cl. 251—305 8 Claims



An exhaust pipe for an internal combustion engine is formed through its side-wall with an internally threaded opening for reception of an externally threaded bearing having a bore therethrough in which the throttle valve shaft is rotatably mounted with clearance, with the throttle valve carried at its inner end within the exhaust pipe and with an operating lever at its outer end. The shaft is formed with a radially projecting collar having an outwardly converging conical surface and the shaft is spring loaded to urge such surface into flush sealing engagement with a conformingly shaped conical bearing face of the bearing, which functions both to seal the bore and to center the valve shaft therein.

3,693,936
CARPET STRETCHER IMPROVEMENTS
Buford L. Payson, Garden Grove, Calif., assignor to Robert E. Strauss, Orange, Calif., a part interest
Filed Aug. 23, 1971, Ser. No. 173,779
Int. Cl. A47g 27/04
U.S. Cl. 254—62 12 Claims

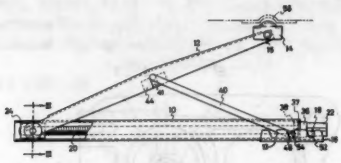


A hand powered carpet stretcher is provided with the improvement of ratchet means to permit locking of the stretcher head at any of a plurality of extensions with remote actuation means to lock the ratchet so that the stretcher can be operated with a single handed motion. In one of the embodiments, the ratchet lock means is automatically engaged or disengaged upon movement of the handle of the stretcher.

3,693,937
LOAD LIFTING MECHANISM

Shinichiro Yamazaki, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan

Filed Jan. 12, 1970, Ser. No. 2,319
Claims priority, application Japan, Jan. 17, 1969, 44/004638
Int. Cl. B66f 33/00
U.S. Cl. 254—126 6 Claims

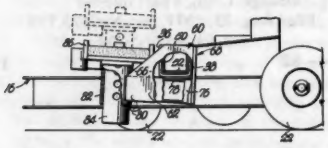


A load lifting jack comprising a support member, a screw shaft rotatably located within the support member, a lifting arm supported at the substantially middle portion by a link and connected at its end to a threaded nut engaged with the screw, the nut being adapted to be displaced along the length of the screw shaft in order to raise or lower the lifting arm, the link being pivotally connected to the lifting arm at one end and having means for engaging the other end with any selected one of a plurality of recesses provided on the support member so that engagement thereof easily and quickly locates the lifting arm in its desired position. A rotatable jack base may be provided for lifting inclined loads to prevent undesired lateral movement of the load lifting jack.

3,693,938
VEHICLE LIFT

Frank D. Freudenthal, and Gary L. Kincaid, both of St. Joseph, Mo., assignors to Gray Manufacturing Company, Inc., St. Joseph, Mo.

Filed April 21, 1971, Ser. No. 135,985
Int. Cl. B66f 3/00; B60p 1/00
U.S. Cl. 254—134 9 Claims

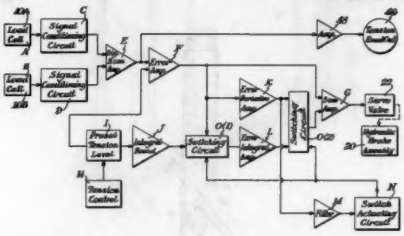


A vehicle lift having a shiftable, vehicle elevating framework, the framework including a cross frame, there being means carried by the cross frame for engaging the vehicle to be lifted, the means including extensible arms telescoped within each end of the cross frame, and laterally extending reach pieces connected to the outer ends of each of the arms by an L-shaped connecting bracket whereby to position the reach pieces below the outer end of the corresponding arm, the bracket being configured in such a manner as to permit full retraction of the reach pieces within the confines of the cross frame. Each of the reach pieces carries a tubular socket at its free end, the sockets each carrying a vehicle engaging saddle assembly which is adjustable in a vertical path and swingable in a horizontal plane to permit maximum utilization of the saddle assemblies to engage the vehicle and to present an unobstructed space therebetween when the same are used.

3,693,939
TENSION CONTROL SYSTEM

Wilson C. Buckson, Wilmington, Del., assignor to All American Industries, Inc., Wilmington, Del.

Filed April 22, 1971, Ser. No. 136,475
Int. Cl. B66d 1/48
U.S. Cl. 254—172 7 Claims

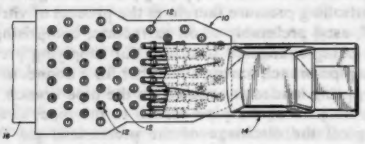


The brake on an energy absorbing winch is controlled to maintain a predetermined tension in its line during payout by an electronic control circuit having a summing amplifier which operates the brake in response to several signals in various combinations. A signal corresponding to the deviation between the actual line tension and the preset tension is generated by a differential amplifier having inputs of actual and desired tension. Preliminarily and during initial payout, a derivative amplifier modulates the deviation and applies a corrective signal to the summing amplifier, which corresponds to the derivative of the tension deviation with respect to time. The derivative corrective signal immediately releases the brake on capture and initiation of payout. A switch removes the derivative signal from the summing amplifier as soon as the derivative changes polarity from negative to positive, and connects an error integral amplifier between the differential amplifier and the summing amplifier to stably control the braking pressure to obtain the predetermined tension. The standard source binds the error integral amplifier to the predetermined tension before the error integral amplifier is switched into the control circuit. The switching is accomplished by a modified Schmidt-Trigger, which is originally in the neutral state. The derivative amplifier is operatively connected to the Schmidt-Trigger circuit. When the derivative of the deviation originally goes negative, it cocks the trigger circuit. The trigger is actuated when the derivative becomes slightly positive to operate a relay, which disconnects the deviation derivative amplifier from the summing amplifier and replaces it by the deviation integral amplifier. At the end of the arrestment when the actual drag load is below the predetermined tension, the integral amplifier is driven to saturation which applies the full brake pressure during reelingin of the line.

3,693,940
ENERGY ABSORBING BARRIER POST ASSEMBLY

Giles A. Kendall, Burbank, and Harish K. Bhutani, Downey, both of Calif., assignors to Menasco Manufacturing Company, Burbank, Calif.

Filed Dec. 8, 1970, Ser. No. 96,103
Int. Cl. E01f 13/00
U.S. Cl. 256—1 21 Claims

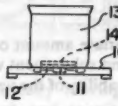


A barrier post which is angularly movable at a predetermined angle from vertical upon impact at any angle, the point

of the angular movement is damped by movement of a viscous material past a piston within a cylinder. The exterior surface of the post is formed to frictionally restrain the impacting object against upper sliding movement along the post. A group of such posts are to be employed to effect complete absorption of the impact force.

3,693,941
ELECTROMAGNETICALLY PROPELLED STIRRER AND SHAKER

Jan S. Suchy, 14435 Superior Road, Cleveland Heights, Ohio
Filed Aug. 23, 1971, Ser. No. 173,925
Int. Cl. B01f 9/00
U.S. Cl. 259—1 **5 Claims**

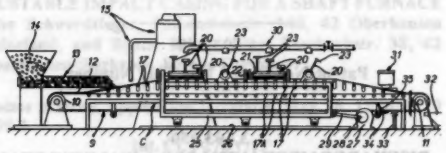


A motorless laboratory magnetic stirrer is composed from two fixed electromagnets whose magnetic poles lie in a common plane and are perpendicular to each other. Both electromagnets are supplied by alternating currents of adjustable, but equal, low frequency mutually phase-shifted by 90°, which are produced by a controlled switching of the network current. The angular velocity of the rotating magnetic field produced in this way equals the frequency of the supplying current and acts to rotate a magnetic rod in a liquid.

In a similar way a magnetically propelled shaker is constructed. Two permanent magnets perpendicular to each other are fixed to a tray and placed close to the electromagnets mentioned above. The tray is attached to a base in a manner which permits its free movement in the plane of the tray without rotation of the tray. The tray then exercises an orbital movement and acts to shake a liquid in a vessel placed on the tray. To obtain higher force for shaking, the principles of attracting two permanent magnets by stationary electromagnets is replaced by solenoids, attracting ferromagnetic cores.

3,693,942
MIXING PLANT FOR PREPARING MATERIALS COMPRISING COATED ELEMENTS

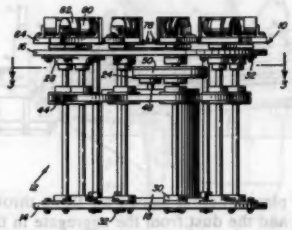
Pierre Foucault, P.O. 12, Avenue des Vesinet, 78 Croissy-sur-Seine, France
Filed Aug. 23, 1971, Ser. No. 174,107
Int. Cl. B01f 15/00
U.S. Cl. 259—2 **10 Claims**



A continuously operated mixing plant for making coated elements, comprising an endless belt passing round end rollers with a substantially horizontal upper run, part of which is formed into a trough by shaping means, and which passes in succession in vertical alignment with a feeder for granulated elements, a binder, a battery of beaters and at least one optional flattening device upstream of a product recuperating device.

3,693,943
SHAKER

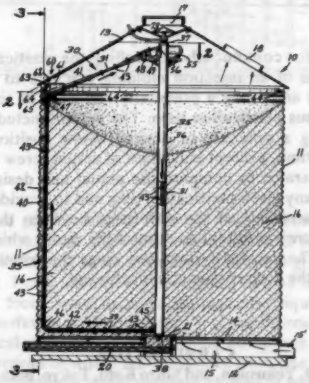
Rudolph P. Vester, 23 Carlstia Drive, Jeffersonville, Ind.
Filed Jan. 15, 1971, Ser. No. 106,719
Int. Cl. B01f 11/00
U.S. Cl. 259—56 **12 Claims**



A shaker for mixing or blending the components of fluent mixtures. The shaker includes a base defining a center about which a plurality of shafts are circumferentially generally evenly spaced and each of the shafts is journaled from the base and includes an eccentric portion journaled in a corresponding holder for materials to be blended or mixed with each holder anchored to the base by means of an expansion spring anchored to the corresponding holder at a point spaced laterally of the associated eccentric portion. Further, the eccentric portions of the various shafts are disposed relative to each other and the base whereby the imbalance forces acting thereon by the holder all act to cancel out each other during rotation of the shafts at the same angular speed.

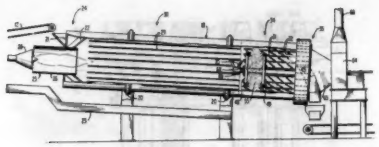
3,693,944
GRAIN STIRRING APPARATUS

David M. Murphy, RFD #4, Mason City, Iowa
Filed Aug. 13, 1971, Ser. No. 171,421
Int. Cl. B01f 5/26
U.S. Cl. 259—114 **7 Claims**



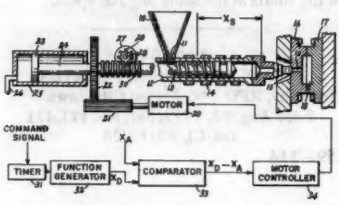
A grain stirring device includes an endless flexible conveyor which is mounted on a supporting structure for movements about a circuitous path and for rotation of the circuitous path on a vertical axis within a circular grain drying bin and power means is provided to impart the circuitous and rotational movements upon proper energization of the power means.

3,693,945
ASPHALT PREPARATION PLANT
James Donald Brock, Chattanooga, Tenn., assignor to CMI Corporation, Oklahoma City, Okla.
Continuation-in-part of Ser. No. 41,145, May 25, 1970, Pat. No. 3,614,071. This application Jan. 20, 1971, Ser. No. 108,024
Int. Cl. B28c 5/06
U.S. Cl. 259—146 22 Claims



An asphalt plant wherein heated air flows through an aggregate dryer and the dust from the aggregate in the dryer is carried in a flow of air from the dryer. The flow of air is subsequently sprayed with bituminous liquid so that dust is combined with the liquid and removed from the flow of air.

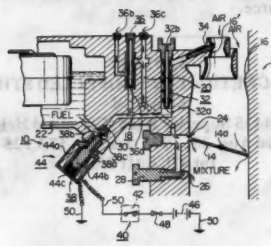
3,693,946
PLASTICATION CONTROL FOR INJECTION MOLDING MACHINES
Herbert E. Merritt, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed May 10, 1971, Ser. No. 141,535
Int. Cl. B29f 3/02
U.S. Cl. 259—191 5 Claims



A system for continuously controlling the plastication time and shot size of an injection molding machine to predetermined limits and along a predetermined path of screw axial position versus plastication time. The system includes means for providing a schedule of desired screw positions versus plastication time, a direct indication of actual screw positions, and a comparator to compare the actual and desired screw position for any given plastication time and to provide an error signal representative of the difference between the desired and actual screw positions to control the motor which rotates the screw. The control system also stops the rotation of the screw when the desired shot size is achieved.

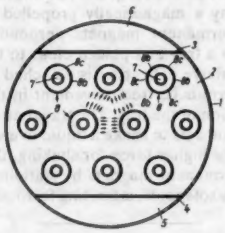
3,693,947
CARBURETTOR
Kenji Masaki, Yokosuka, and Sinzo Kato, Tokyo, both of Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan
Filed Sept. 3, 1970, Ser. No. 69,392
Claims priority, application Japan, Sept. 9, 1969, 44/71375
Int. Cl. F02m 1/10
U.S. Cl. 261—39 B 2 Claims

A mixture supply control system for an internal combustion engine of a motor vehicle, comprising valve means for controlling the effective area of the main fuel jet of the main mixture circuit, and temperature sensing means for controlling the operation of the valve means in response to the temperature of the engine. The mixture supply control system supplies



to the engine an appropriate amount of enriched mixture for the initial cold engine and subsequent warming-up operations so as to improve the drivability of the vehicle.

3,693,948
BUBBLE CAPS FOR BUBBLE COLUMNS
Hans-Joachim Kloss, Hilden, Germany, assignor to Julius Montz GmbH, Hilden, Germany
Filed April 2, 1970, Ser. No. 29,347
Claims priority, application Germany, April 5, 1969, P 19 17 536.1
Int. Cl. B01d 3/20
U.S. Cl. 261—114 A 12 Claims



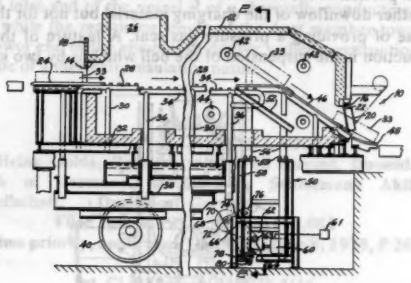
Bubble cap tray for bubble cap columns, comprising a plurality of bubble caps, each bubble cap having a top and a skirt extending downwardly from the top, openings for discharge of gas through the bubble cap at spaced intervals along the skirt, dividing the skirt into gas discharge openings and closed areas intermediate with the gas discharge openings, the openings of each cap confronting closed areas of the adjacent caps, so that gas streams issuing from the cap openings are not directed against one another.

3,693,949
Patent Not Issued For This Number

3,693,950
DISCHARGE MECHANISM FOR A WALKING BEAM FURNACE
Albert T. Enk, Toledo, Ohio, assignor to Midland-Ross Corporation, Toledo, Ohio
Filed Dec. 17, 1970, Ser. No. 99,068
Int. Cl. F27d 3/00
U.S. Cl. 263—6 A 4 Claims

A discharge mechanism is provided for a furnace having means to convey work therethrough wherein the work is removed from the furnace by contact with a supporting

member having an inclined plane. An example of such a furnace is a walking beam furnace wherein the end portion of the stationary rails of the walking beam furnace is inclined



downwardly and a vertically moving member is provided which contacts the work and causes it to move down the incline through the force of gravity.

3,693,951

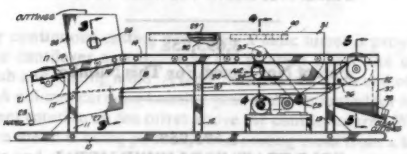
PROCESS AND APPARATUS FOR THE TREATMENT OF WELL CUTTINGS

Charles P. Lawhon, Houston; Kenneth O. Taylor, Pasadena, both of Tex., and Jerry A. Brock, Commerce, Calif., assignors to NL Industries, Inc., New York, N.Y.

Filed Dec. 30, 1970, Ser. No. 102,630

Int. Cl. F27b *9/24*

U.S. Cl. 263—8 R **8 Claims**



A method and apparatus for the treatment of well cuttings especially adapted for offshore use provides a conveyor belt moving the cuttings through a preheater for partial drying and then to a high-intensity infrared heating chamber in which all volatile material is expelled from the cuttings at a surface temperature higher than the combustion point of petroleum, so that non-polluting, oil-free cuttings are discharged.

3,693,952

ADJUSTABLE IMPACT CASING FOR A SHAFT FURNACE

Gunter Schwerdtfeger, Falkensteinstr. 148, 42 Oberhausen Rhineland, and Bruno Kammerling, Rossbachstr. 38, 42 Oberhausen-Sterkrade, both of Germany

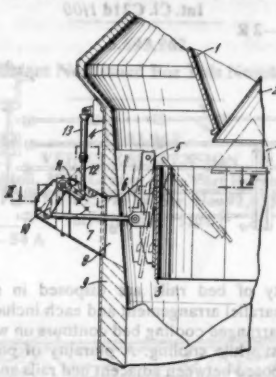
Filed May 17, 1971, Ser. No. 144,978

Claims priority, application Germany, May 16, 1970, P 20 24 190.1

Int. Cl. F27b *1/12*

U.S. Cl. 263—29 **6 Claims**

An adjustable impact casing for use in a shaft furnace is formed of a plurality of upwardly extending segments. The segments are arranged into an inner circular row enclosed by an outer circular row. In each row, the segments are spaced angularly apart and are offset to the segments in the other row with their upwardly extending edges arranged in overlapping and substantially contacting relationship. The segments are pivotally supported about axes arranged transversely of the upright axis of the casing and the segments in the inner row are secured to one drive arrangement while the segments in the outer row are secured to another but similar drive arrangement. The two drive arrangements are controlled for moving



the segments so that a time delay is provided between the movement of the segments in the inner row and the movement of the segments in the outer row.

3,693,953

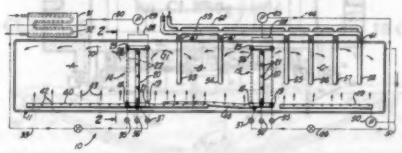
APPARATUS AND METHOD OF FORMING A LIQUID CURTAIN AND THERMAL GRADIENT CONTROL SYSTEM

George H. Michel, Glendora, Calif., assignor to Armorlite Lens Company, Inc., Burbank, Calif.

Filed May 27, 1971, Ser. No. 147,509

Int. Cl. F27d *23/00*

U.S. Cl. 263—50 **42 Claims**



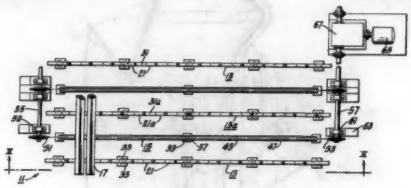
Apparatus and method of forming a liquid curtain and of utilizing the same to segregate a body of fluid into distinct zones and utilize the same to provide a thermal gradient control system. Items undergoing processing can be conveyed in succession from zone to zone through the liquid curtains without interfering with the integrity of the thermal gradient. In one typical embodiment the chamber comprises a long tank of liquid portions of which are withdrawn from one edge of the curtains and returned under pressure to rows of jets along curtain edges remote from the first mentioned edge. The liquid curtains provide simple, highly effective means for isolating zones of the liquid from one another and permitting these zones to be maintained at different desired temperatures while in use to process items conveyed therethrough. The liquid may be readily maintained at different temperature gradients of both a linear and non-linear nature by appropriate use of the invention principles.

3,693,954

COOLING BED

John W. Toperzer; Shibendra P. Neogi, both of Pittsburgh, and Dale K. Beachy, Finleyville, all of Pa., assignors to Koppers Company Inc.

Filed April 5, 1971, Ser. No. 131,179
Int. Cl. C21d 1/00
U.S. Cl. 266—2 R 10 Claims



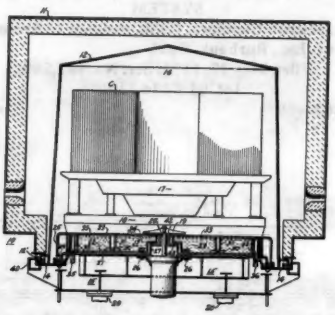
A plurality of bed rails are disposed in spaced apart, horizontal, parallel arrangement and each includes a plurality of regularly arranged cooling bed contours on which elongate members rest while cooling. A plurality of power operated dogs are disposed between adjacent bed rails and the dogs engage the elongate members and move them along the contours of the bed rails, turning the members over.

3,693,955

COMPONENT ANNEALING BASE

Herbert Wald; Harold K. Young, and William O. Bianch, all of Baltimore, Md., assignors to Bethlehem Steel Corporation

Filed March 15, 1971, Ser. No. 124,090
Int. Cl. C21d 1/06
U.S. Cl. 266—5 B 10 Claims



Apparatus for supporting a charge in a high temperature annealing furnace which comprises a plurality of components arranged in combination for easy replacement of any component or the entire assembly. The apparatus includes a refractory tray which is sealed from the gaseous atmosphere of the heating chamber by a unique arrangement of the component parts of the base assembly including separable top and bottom plates and a compartmented seal trough.

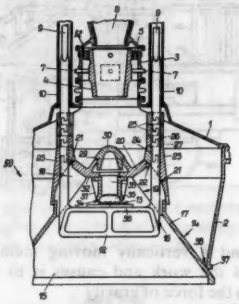
3,693,956

CHARGING DEVICE FOR A METALLURGICAL FURNACE

Peter Hendrik Nieboer, Kapellen/Moers, Germany, assignor to Demag Aktiengesellschaft, Duisburg, Germany

Filed May 1, 1970, Ser. No. 33,541
Claims priority, application Germany, Sept. 5, 1969, P 19 45 132.2
Int. Cl. F27b 1/12
U.S. Cl. 266—27 9 Claims

A charging device for a metallurgical furnace includes a hopper and bell assembly which are positionable in a furnace head. The hopper is pivotally mounted below a storage bin and it may be oriented by push rods to drop the charged material in any desired direction. A distributor bell is mounted within the furnace head on supporting rods in a position such that the outer periphery thereof may be engaged with a top pan portion of the furnace to provide a seal for preventing the further downflow of the charging material but not for the purpose of providing a pressure gas seal. A feature of the construction is the suspension of the bell which is by two suspen-



sion rods which pass through side openings in the distributor bell and which connect to a central supporting bridge extending therebetween. The bridge has a universal pivotal connection between the bridges and the distributor bell. Universal pivotal movement is permitted by the bell on the suspension rods and the passage of the rods through the bell walls is effected in the area of a spherical projecting portion of the bell having a spherical outer generating surface which may slide within a generating surface of contoured flow bodies which are arranged around the supporting rods or coverings.

3,693,957

Patent Not Issued For This Number

3,693,958

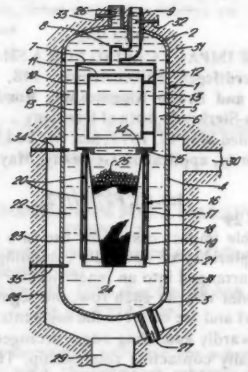
Patent Not Issued For This Number

3,693,959

COLD TRAPS FOR LIQUID METAL

Ronald Swinhoe, Knutsford, and Allan Norman Hamer, Culcheth, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Dec. 9, 1970, Ser. No. 96,436
Claims priority, application Great Britain, Dec. 18, 1969, 61,826/69
Int. Cl. C22b 9/02
U.S. Cl. 266—37 2 Claims



A cold trap for liquid metal comprises a vessel, a cylindrical duct member being arranged concentrically in the vessel.

Flow of liquid metal from inlet into the vessel is downwardly along the annular interspace defined between the duct member and the inner wall of the vessel and then into the lower end of the vessel and upwardly through the duct member. The upper length of the duct member from the liquid metal inlet and of the vessel is of a thermally conducting nature, while the remaining length of the duct member towards the lower end of the vessel is of double walled construction so as to be of a thermally insulating nature.

3,693,960

TURRET FOR CASTING LADLES

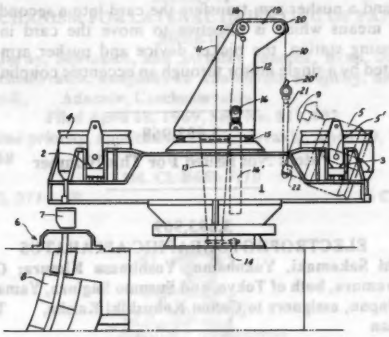
Karl-Heinz Golde, Ratingen, and Willi Simons, Dusseldorf, both of Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed June 4, 1971, Ser. No. 150,082

Claims priority, application Germany, June 8, 1970, P 20 28 078.8

Int. Cl. B22d *11/10*; F27d *3/14*

U.S. Cl. 266—38 **4 Claims**



For continuous casting machines, a ladle turret is provided with a cantilever arm mounted for rotation above the usual tundish and casting mold. A ladle is carried on each end of the arm. A column carrying hoisting gear is also mounted for independent rotation on the turret above the cantilever arm. While molten metal is being poured into a casting mold from a ladle on one end of the arm, the ladle on the other end may be tilted by the hoisting gear to discharge slag.

3,693,961

BLAST FURNACE TUYERE

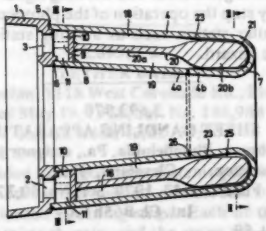
Hans Preisendanz, Moltkestrasse 37, Willich; Georg Schnegelsberg, Saarner Strasse 497, Mulheim-Speldarf; Peter Schuler, Cracauerstr. 75, Krefeld, and Hans Krause, Jordinstrasse 2, Duisburg-Ruhrort, all of Germany

Filed Nov. 4, 1970, Ser. No. 86,648

Claims priority, application Germany, Nov. 5, 1969, P 19 55 547.6; July 25, 1970, P 20 37 011.0

Int. Cl. C21b *7/16*

U.S. Cl. 266—41 **21 Claims**



A blast furnace tuyere has a nozzle with a double tubular jacket wall between which there flows a cooling fluid which is guided by a flow guide installed between the two jacket walls, so that the cooling fluid flows over the inner surfaces of the two jacket walls around the guide. The flow guide occupies substantially the whole of the space between the inner and outer jacket walls adjacent to the nozzle mouth, leaving only a narrow gap through which the cooling fluid can flow.

3,693,962

Patent Not Issued For This Number

3,693,963

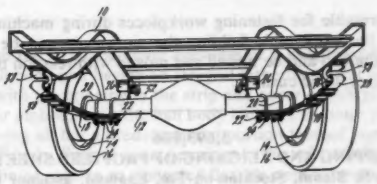
VEHICLE SUSPENSION

John W. Leighton, 3820 Gratiot Ave., Port Huron, Mich.

Filed Nov. 25, 1970, Ser. No. 92,635

Int. Cl. B60g *11/04*

U.S. Cl. 267—54 A **4 Claims**



A leaf spring suspension for an automotive vehicle. The rear ends of the leaf springs are connected to the vehicle body by rubber bushed U-shackles.

3,693,964

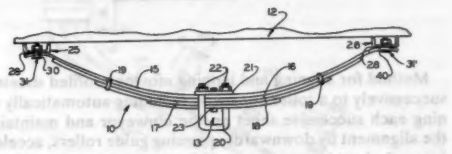
TRAILER SPRING SUSPENSION

Donald J. McGee, Troy, Mich., assignor to H & H Equipment Co., Troy, Mich.

Filed Dec. 16, 1970, Ser. No. 98,605

Int. Cl. B60g *11/04*

U.S. Cl. 267—56 **10 Claims**



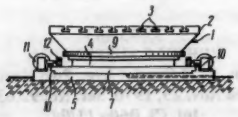
A longitudinal, semi-elliptic type leaf spring assembly, clamped at its midpoint to a vehicle axle, is connected at one end to a vehicle frame by a shoulder bolt or stud unit extending upwardly with slight clearance through a hole in the longest leaf of the assembly, the latter in effect having a non-binding hinging action in the zone of the stud unit as the spring deflects. A similar stud unit connects the opposite end of the assembly to the frame, but in this case it extends through elongated slot in the longest spring leaf, affording a combined hinging and laterally confined longitudinal sliding action at this zone in relation to the frame as the spring assembly elongates during flexure. Conventional spring eyes and shackles are eliminated.

3,693,965

TURNTABLE FOR FASTENING WORKPIECES DURING MACHINING

Iosif Salamonovich Mitsengendler, Sverdlovsk, U.S.S.R., assignor to Uralsky Zavod Tyazhelogo mashinostroenia imeni, S. ordzhonikidge, U.S.S.R.

Filed Nov. 3, 1970, Ser. No. 86,556
Int. Cl. B23q 3/00; B25b 39/06
U.S. Cl. 269—20 **3 Claims**



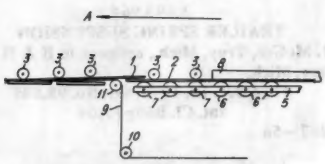
A turntable for fastening workpieces during machining in which the work table holding the workpiece can be lifted above the bed and be turned and moved with relation thereto on a gas or liquid cushion.

3,693,966

LAPPING AND ALIGNING OF PROFILED SHEETS

Martin S. Bloom, Stockton-on-Tee, England, assignor to Imperial Chemical Industries Limited, London, England

Filed June 21, 1971, Ser. No. 154,844
Claims priority, application Great Britain, July 6, 1970, 32,670/70
Int. Cl. B65h 5/00; B65c 9/00
U.S. Cl. 271—1 **10 Claims**



Method for aligning and lapping moving profiled sheets fed successively to a roller conveyor, including automatically aligning each successive sheet on the conveyor and maintaining the alignment by downwardly pressing guide rollers, accelerating each sheet in succession off the conveyor onto an adjacent carrier substrate located higher than the conveyor so that the leading end of any succeeding sheet is lapped by the trailing end of the immediately preceding sheet to a predetermined extent.

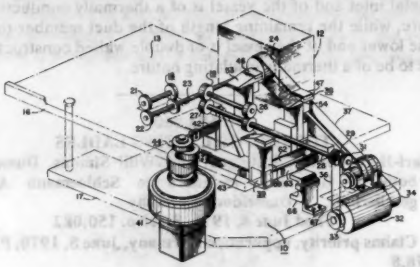
3,693,967

CARD READER

Robert G. Bower, Concord, Mass.; Baisel L. Eveland, Brookside, N.J.; Ivan N. Markowitz, Framingham, Mass., and Earl E. Masterson, Ashley Green, Bucks, England, assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 29, 1970, Ser. No. 76,413
Int. Cl. B65h 3/24, 5/16
U.S. Cl. 271—10 **9 Claims**

Card feeding apparatus for transferring a single card from a stack to a processing station, wherein the cards are transferred to a visible "wait" station along a path, and from the wait station to the operating station along a transverse path. A flexure mounted picker device transfers a card to a first set of roller means which is effective to move the card into the wait station, and a pusher arm transfers the card into a second set of roller means which is effective to move the card into the processing station, the picker device and pusher arm being operated by a single motor through an eccentric coupling.



3,693,968

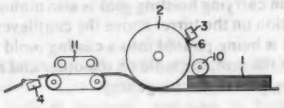
Patent Not Issued For This Number

3,693,969

ELECTROPHOTOGRAPHIC APPARATUS

Hisashi Sakamaki, Yokohama; Yoshimasa Kimura; Osamu Sawamura, both of Tokyo, and Susumo Sugiura, Yamato, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 25, 1971, Ser. No. 109,214
Int. Cl. B65h 7/12
U.S. Cl. 271—57 **5 Claims**



A device for detecting the jamming of copy material in a photocopying machine or the like is provided which can detect not only jamming of copy material occured at any portion of the whole path thereof but also jamming occured in a particular device or station where the jamming tends to occur or causes a serious dangerous condition. The actual time intervals required for copy material to pass through the whole path and through the particular station are compared with the reference time intervals respectively so that when the actual time intervals are longer than the reference time intervals, a warning signal is generated. The warning signal may be used to automatically stop the operation of the photocopying machine or its particular station such as a fixing station in order to prevent a fire hazard.

3,693,970

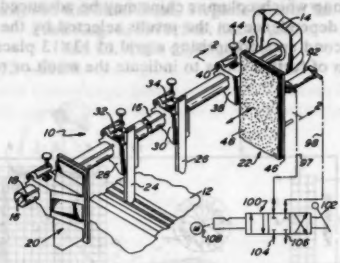
SHEET HANDLING APPARATUS

William Grobman, Philadelphia, Pa., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Oct. 13, 1970, Ser. No. 80,370
Int. Cl. B65h 9/04
U.S. Cl. 271—59 **4 Claims**

Side gauge for sheet handling apparatus such as a printer

slotter which has a pneumatically operable auxiliary gauge



member to allow for quick processing of oversized paperboard blanks with remote control.

3,693,971

MECHANISM FOR LATERAL ORIENTING OF PAPER SHEETS

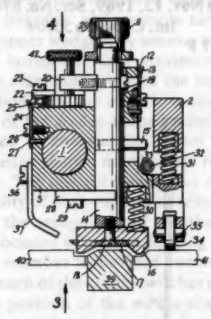
Josef Jurny, Sebranice, and Jaroslav Janecek, Brno, both of Czechoslovakia, assignors to Adamovske strojirny, narodni podnik, Adamov, Czechoslovakia

Filed April 18, 1969, Ser. No. 817,402

Claims priority, application Czechoslovakia, April 19, 1968, 2870 68

Int. Cl. B65h *7/10*

U.S. Cl. 271—59 **6 Claims**



A mechanism for laterally orienting paper sheets in a printing machine having a pair of supporting bars and a reciprocable slidable plate located therebetween. The apparatus includes an oscillating shaft on which is freely mounted a body having pressure rollers depending therefrom in contact with the paper on the slidable plate and an end stop engaging the edge of the paper. The shaft also mounts a fixed member adapted to engage one of the supporting bars. As the shafts oscillate the body and member move in opposite relative directions. Means are provided interconnecting the member with the roller and end stop means whereby the roller and end stops are lifted out of contact with the paper during the period of oscillation.

3,693,972

TETHER BALL

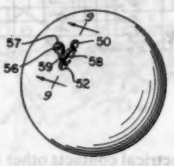
Kenneth R. Minchin, 1118 West Coronado Rd., Phoenix, Ariz.

Filed May 19, 1971, Ser. No. 144,984

Int. Cl. A63b *43/02, 69/38*

U.S. Cl. 273—58 C **2 Claims**

A ball is provided having a tether fastening device, such as a ring plate, affixed to the surface of the ball by a pair of orthogonally oriented fastening strips. Each of the fastening strips has an opening therein, and the strips are located over the ring plate. A portion of the ring plate extends through the openings, and the fastening strips are bonded to the ball body. The fastening strips are preferably oriented at substantially 90° with respect to each other, and at least one cover is positioned over the ball body and over the fastening strips. At least one cover also has an opening therein positioned with the ring plate extending through the cover opening, and the cover is bonded to the ball body to provide a strong and uniformly resilient tether ball. Other embodiments involve either the use of a pair of intersecting nylon cords which partially encircle the ball body and have tethering loop portions extending



through the strip and cover openings or a plug threaded into the ball body and having an integral tethering eyelet in alignment with the opening in the strip and cover openings. In yet another embodiment, the ball body includes an outer jute lining having all but a predetermined portion thereof bonded to the ball body. Spaced apart openings in the unbonded portion of the lining receive an elongated flexible stem having an aperture at each end thereof, with one of the apertured ends passing through the other apertured end adjacent the outer surface of the lining. The ball may be used as a sewer ball, boat bumper, float for fish nets, or in games and athletic events.

3,693,973

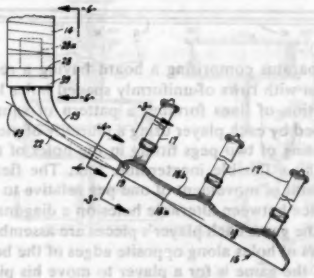
TENNIS STROKE TRAINING DEVICE

Willard Harvey Wattenburg, 11 Idyll Court, Orinda, Calif.

Filed Aug. 20, 1970, Ser. No. 65,536

Int. Cl. A63b *69/38*

U.S. Cl. 273—73 R **11 Claims**



A tennis stroke training device comprising a cuff member adapted to be strapped tightly about the forearm of a player, rigid elements extending from the cuff member to a tennis racket and mounted in the base of the tennis racket in a manner to permit limited rotational movement of the racket about its longitudinal axis while maintaining fixed or rigid the angle defined between the forearm and the axis of the racket handle and lying in the plane defined by the forearm and racket handle.

3,693,974

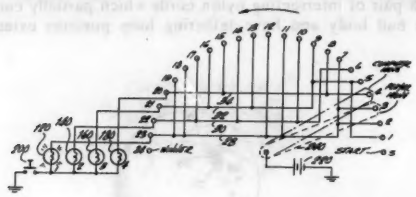
Patent Not Issued For This Number

3,693,975

COMPUTER GAME

John J. Ruggiero, Bronx, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Nov. 16, 1970, Ser. No. 89,849
Int. Cl. A63f 3/00
U.S. Cl. 273—130 AB **4 Claims**



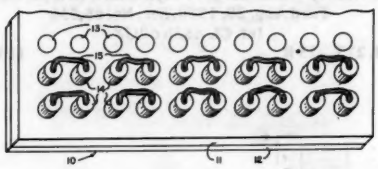
A plurality of electrical contacts other than the first and last one each connected to any one of a second plurality of bus bars. Each bar is connected through a corresponding lamp to one end of a common switch. The other end of the switch is connected to one side of a power supply. The other side of the power supply is connected to a contact arm manually movable to any one of the contacts. The user plays against a built in program to win or lose in accordance with specified rules.

3,693,976

PEG-BOARD GAME APPARATUS

Walter Flack, P.O. Box 331, Martins Ferry, Ohio

Filed March 18, 1971, Ser. No. 125,768
Int. Cl. A63f 3/00
U.S. Cl. 273—131 BA **1 Claim**



Game apparatus comprising a board having a rectangular configuration with rows of uniformly spaced holes located at the intersection of lines forming a pattern of squares. The game is played by each player using a plurality of pieces, each piece consisting of two pegs fitting in the holes of the board and joined by a flexible inextensible link. The flexible link limits the ambit of movement of one peg relative to the other to the distance between alternate holes on a diagonal line. At the start of the game each player's pieces are assembled in the first two rows of holes along opposite edges of the board. The objective of the game is for a player to move his pieces, one peg at a time across the board and to reassemble them similarly to the starting arrangement in the two rows of holes adjacent the opposite edge of the board.

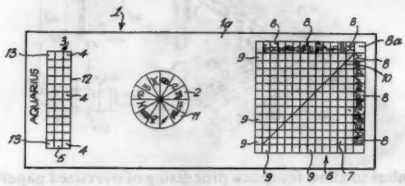
3,693,977

BOARD GAME APPARATUS

David Guy de Keller, The East India & Sports Club, St. James Square, London, S.W. 1, England

Filed Aug. 28, 1970, Ser. No. 67,906
Claims priority, application Great Britain, Sept. 2, 1969, 43,332/69
Int. Cl. A63f 3/00
U.S. Cl. 273—134 E **4 Claims**

Game apparatus comprising a playing surface and a random result selector consisting of a roulette wheel, said surface being marked out with a first area constituted by 2 to 12 columns each comprising 1 to 5 places for the reception of chips, along which columns chips may be advanced place by place in dependence on the results selected by the selector, and a second area comprising a grid of 13×13 places for the reception of further chips to indicate the result or results bet on for an individual operation of the random result selector. Result selector indicia are arranged along two adjacent sides of the grid in the same order, so that one indicium is selected by placing chips along a diagonal, whereas chips placed elsewhere on the grid select two different indicia. In a preferred embodiment the apparatus is comprised in a gaming table.

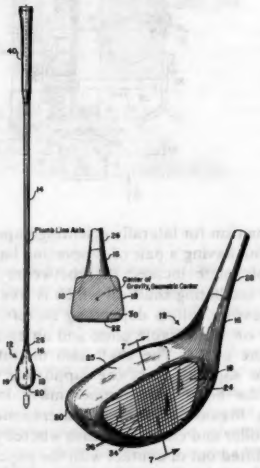


3,693,978

SYMMETRICAL GOLF CLUB HEAD WITH CENTER OF GRAVITY COINCIDENT WITH GEOMETRIC CENTER

Victor East, 443 Ridge Avenue, Evanston, Ill.

Filed Nov. 13, 1969, Ser. No. 876,489
Int. Cl. A63b 53/04
U.S. Cl. 273—167 F **3 Claims**

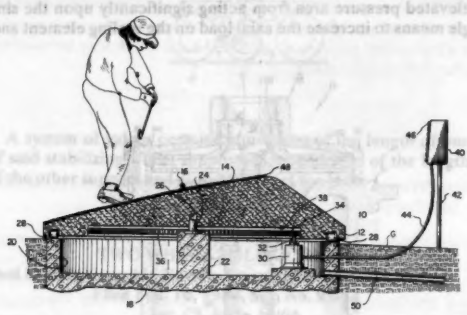


A wood type gold club in which the head is comprised of a molded, high impact, plastic material of uniform density and is homogenous throughout, both as regards density and weight, embodies similarly lofted front and rear faces, has its geometric center coinciding with its center of gravity, is symmetrical with respect to a vertical plane passing centrally and longitudinally therethrough and also through the axis of the shaft, and is so constructed, dimensioned, shaped and proportioned that when the club is supported in pendulum fashion from the proximate end of the club shaft, the plumb line axis passes through the common or coincident geometric center and center of gravity of the head.

3,693,979
GOLF PRACTICE DEVICE

Lee E. Koett, 901 Cardinal Road, Virginia Beach, Va.

Filed Aug. 6, 1970, Ser. No. 61,662
Int. Cl. A63b *69/36*, *67/02*
U.S. Cl. 273—195 B 8 Claims



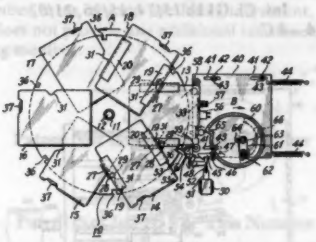
A golf practice device is disclosed which incorporates a wedge-shaped member having an inclined upper surface from which a golf ball may be driven. The wedge-shaped member may be stationary or may be rotatable relative to a remote target, either rotatable manually or by means of a suitable drive means, thereby providing a variety of lies of the ball, including uphill, downhill, sidehill and crosshill. In an alternate embodiment of the invention the device comprises a pair of vertically-superimposed wedge-shaped members, each of which may be rotated relative to the other and a remote target, whereby the top surface of the upper wedge may assume a variety of angles ranging from the horizontal to a maximum inclination, as determined by the maximum angle of the individual wedges. In a preferred embodiment, an electric motor is provided for effecting rotation of the wedge-shaped member, and control means are provided to energize the motor and to stop the motor when the wedge-shaped member has reached a desired rotational position. The control means may include a control box having a plurality of push-buttons to select a desired rotational position of the wedge-shaped member, a plurality of micro-switches associated with an underlying base upon which the wedge-shaped member is disposed controlling the operation of the motor, each of the micro-switches corresponding to a single rotational position of the wedge-shaped member. A plurality of cam members may be disposed about the periphery of the wedge-shaped member, each of the cam members contacting one of the micro-switches to thereby stop rotation of the wedge-shaped member when a pre-selected one of the cam members contacts its corresponding micro-switch.

3,693,980
Patent Not Issued For This Number

3,693,981
TAPE PLAYING APPARATUS FOR USE WITH PLURALITY OF ENDLESS MAGNETIC TAPE CARTRIDGES

Itsuki Ban, 829 Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan

Filed Aug. 18, 1970, Ser. No. 64,743
Claims priority, application Japan, Aug. 20, 1969, 44/78509
Int. Cl. G11b *23/12*
U.S. Cl. 274—4 F 10 Claims

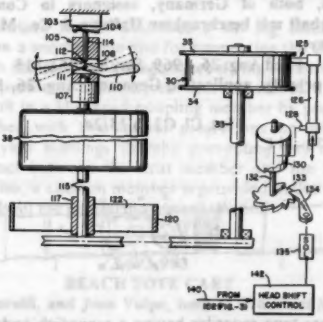


A tape playing apparatus for use with a plurality of endless magnetic tape cartridges which comprises a rotatable carriage provided with a holding device for radially holding two groups of cartridges in a manner such that one group is laid over the other group and offset to one another, a device for rotatably driving said carriage, a driving device for moving up and down the upper cartridges and the lower cartridges by a distance corresponding to the difference in level of the cartridges, first latch device for arresting rotation of the carriage to hold one of the cartridges in a predetermined position, a reciprocally movable deck provided with reproducing members such as a capstan, a magnetic head and the like for reproducing the cartridge in the play position, driving device for moving the deck into and from a reproducing station where the reproducing members play the cartridge in the play position and a non-reproducing station where the reproducing members are away from the cartridge, and a second latch device for holding the deck in the reproducing station.

3,693,982
REVERSIBLE TAPE TRANSPORT SYSTEM

Don C. Barnett, Columbus, Ind., and Kingston E. Ganske, Rough and Ready, Calif., assignors to Arvin Industries, Inc., Columbus, Ind.

Division of Ser. No. 758,061, Sept. 6, 1968, Pat. No. 3,550,985. This application Sept. 4, 1970, Ser. No. 69,546
Int. Cl. G11b *21/08*, *15/44*
U.S. Cl. 274—4 A 1 Claim



A transport for flexible tape employs a reversible rotatable capstan with supply and take-up rolls mounted on axes parallel to the axis of rotation of and movable toward and away from the capstan as tape is moved from one roll to the other. Whichever roll is functioning as a take-up is friction driven by the capstan. A synchronous motor drives the capstan and has a resonant damper to minimize velocity changes at running speed. When used as a multitrack longitudinal recorder, the transducer is quickly shifted to follow a different track as a tape direction change occurs when most of the tape is wound on one of the rolls.

3,693,983

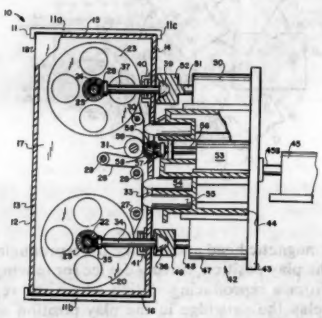
TAPE CARTRIDGE DRIVE AND TRANSDUCING APPARATUS FOR THE TAPE THEREOF

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.

Division of Ser. No. 142,748, Aug. 28, 1961, which is a division of Ser. No. 515,417, June 14, 1955, Pat. No. 3,003,109. This application Nov. 30, 199970, Ser. No. 93,778. The portion of the term of this patent subsequent to May 12, 1987, has been disclaimed.

Int. Cl. G11b *15/24, 15/26, 21/02*

U.S. Cl. 274—4 C 2 Claims



A magnetic transducing apparatus is provided employing one or more cartridges or magazines having tape driven between two reels which are rotatably supported within the cartridge. The tape drive and transducing means are supported on a common mount which is movable towards and away from the magazine and is operable to cause the tape drive means and the transducing means to simultaneously engage the tape in the magazine. Means are also provided for power driving either of the reels in the magazine to take up the tape driven past the transducing means by the drive means engaging the tape.

3,693,984

MINIATURE TAPE RECORDER

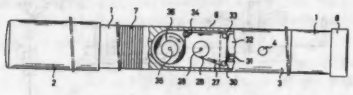
Georg Probst, Munich, and Walter Herterich, Dachau, near Munich, both of Germany, assignors to Compur-werk Gesellschaft mit beschrankter Haftung & Co., Munich, Germany

Filed Aug. 26, 1969, Ser. No. 853,115

Claims priority, application Germany, Aug. 26, 1968, P 17 97 181.2

Int. Cl. G11b *15/24*

U.S. Cl. 274—4 C 6 Claims



Miniature tape recorder having a recording and play back head and combined microphone-loud-speaker arranged with their axes substantially co-axial with the projected axis of the drive motor to afford size and noise level reduction.

3,693,985

END FACE FLUID SEAL UNIT

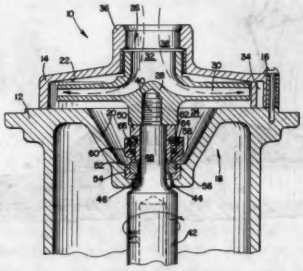
Arthur M. Dillner, 14321 South Stewart, Riverdale, Ill.

Filed May 12, 1971, Ser. No. 142,695

Int. Cl. F16l *17/00*; F04d *29/10*

U.S. Cl. 277—29 14 Claims

A seal for use between first and second relatively movable elements to retain fluids within a predetermined area of elevated pressure in a pump or other application. The seal is of the end face type and includes a primary sealing element, means for urging the primary sealing element against a cooperating mating surface to provide a primary seal, single means for transmitting torque from the first element to the sealing ring and for applying a desired axial load to the sealing element, means for preventing the pressure within the elevated pressure area from acting significantly upon the single means to increase the axial load on the sealing element and



a secondary seal to prevent leakage of the fluid to be sealed to an area of reduced pressure by flow between the first element and the primary sealing element. The seal unit provides a number of advantages over similar seal units, including the ability to seal effectively in relatively high pressure environments, while retaining most or all of the advantages of similar prior art seals. The seal assembly is capable of use in a variety of applications, including seals for pumps used in appliances, automotive applications, and elsewhere.

3,693,986

SEALING DEVICES

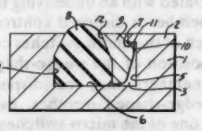
John Walkinshaw Lambie, 13 Cuillin Place, Kilmarnock, Ayrshire, Scotland

Filed Oct. 26, 1970, Ser. No. 83,829

Claims priority, application Great Britain, Oct. 25, 1969, 52,388/69

Int. Cl. F16j *15/00, 15/32*

U.S. Cl. 277—188 6 Claims



A fluid seal for a disc valve or the like wherein a resilient seal is confined within a circumferential recess in the valve body which has a projecting ledge on at least one side of said recess. At lease one gib strip is positioned between the seal and the projecting ledge. One side of the gib strip has a stepped portion to present a projecting ledge whereby the strip and seal are retained resiliently between the side wall of the recess and the resilient seal. A second embodiment discloses the use of the gib strips and corresponding ledges on each side of the resilient seal.

3,693,987

STABILIZERS ENSURING A VERTICAL POSITION TO TWO-WHEELED VEHICLES

Emile Bobard, P.O. Box 17, Rue de Reon, Beaune, Cote d'Or, and Just Delaunay, L'Etang-Vergy, Cote d'Or, both of France

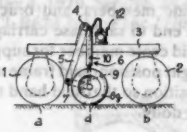
Filed May 24, 1971, Ser. No. 146,077

Int. Cl. B60q *17/00*

U.S. Cl. 280—6 H 6 Claims

Stabilizing device for a two-wheeled vehicle, the device including two stabilizing wheels mounted, on either side of the

bearing line of the wheels of the frame on the ground, on hydraulic supports which are connected to a jack for hydraulic adjustment of their length.



A system of valves permits adjustment of the length of one of said stabilizing wheel supports independently of the length of the other support and of the action of the jack.

3,693,988

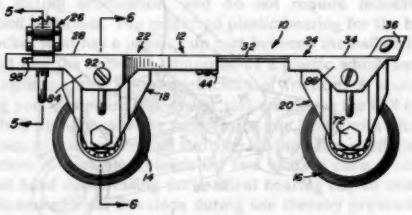
TWO WHEEL ROLLER SKATE

Paul F. Steinhiser, 321 Beverly Court, Michigan City, Ind.

Filed Feb. 10, 1970, Ser. No. 9,472

Int. Cl. A63c *17/06*

U.S. Cl. 280—11.23 **15 Claims**



A roller skate supporting the load of a person on two wheels centrally aligned with the longitudinal axis of the skate body. The wheels are rotatably mounted on axles carried by brackets pivoted to the body in longitudinally spaced relation for tracking a curved path in response to lateral pressure exerted on the wheels by the person attempting to make a turn. The skate is fastened to the toe portion of the shoe by a strap extending from clips on laterally adjustable rack bars.

3,693,989

SAFETY SKI BINDINGS

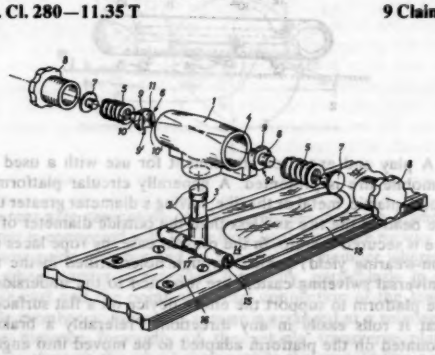
Karl Dieter Forcht, Bad Schachenerstrasse 78, D-8000 Munich 80, Germany

Filed May 1, 1970, Ser. No. 33,779

Claims priority, application Germany, May 6, 1969, P 19 23 038.7

Int. Cl. A63c *91/00*

U.S. Cl. 280—11.35 T **9 Claims**



A safety ski binding particularly designed to hold the toe of a ski boot properly connected with a ski while automatically releasing the ski boot when required. The binding includes a pivot whose axis is perpendicular to the upper surface of the ski in at least one position of the pivot. A swing member is swingable about the pivot and carries a toe clamp for engaging the toe of a boot. A spring assembly coacts with the pivot and the swing member to yieldably resist swinging of the latter about the pivot axis from a central neutral position. The spring assembly acts in such a way as to increase the resistance to turning of the swing member from its neutral position only through a predetermined initial angular increment. When the swing member turns beyond the latter increment, the spring assembly does not provide any additional resistance to turning of the swing member.

3,693,990

Patent Not Issued For This Number

3,693,991

Patent Not Issued For This Number

3,693,992

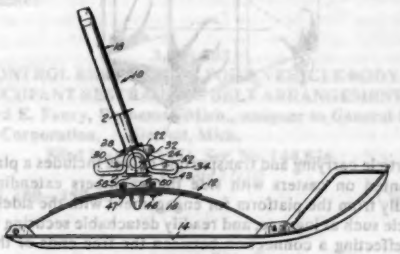
SNOWMOBILE SKI LEG

Georges Piedboeuf, Valcourt, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada

Filed Oct. 16, 1970, Ser. No. 81,406

Int. Cl. B62b *13/12*

U.S. Cl. 280—26 **7 Claims**



The disclosure herein describes a ski leg assembly for mounting on a snowmobile and for connecting the ski runner assembly to the steering linkage thereof; the invention overcomes the problems encountered with the standard connection of a bolt in a U-shaped coupling member by providing a strut member with two lateral projections on which are mounted nylon bushings thereby preventing any metal-to-metal contact between the strut member and the coupling member. Also, a cushion member is provided under the strut member to limit the pivotal movement thereof.

3,693,993

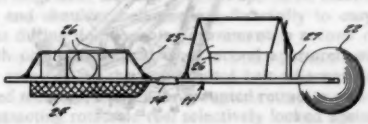
BEACH TOTE CART

Peter Mazzarelli, and Jean Volpe, both of 476 West Main St., Huntington, N.Y.

Filed Jan. 5, 1971, Ser. No. 104,099

Int. Cl. B62b *1/12*

U.S. Cl. 280—30 **2 Claims**



A convertible cart for beach use, the device including a frame work of a pair of frames hinged together for pivoting in

either direction so that the cart can serve either as a cot or lounging chair, the frames supporting webbling areas therein, each of the frames being supportable in elevated position above the ground by downwardly pivotable legs, and one end of the framework forming a convenient pull handle while the other end is supported on a rollable cylinder for travelling over the ground.

3,693,994

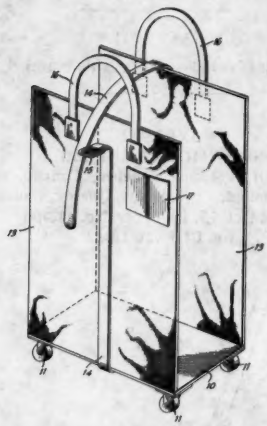
ARTICLE TRANSPORTING DEVICE

Eleanor A. Wilson, 350 W. David Rd., Dayton, Ohio

Filed June 10, 1970, Ser. No. 45,182

Int. Cl. B62b *1/00*

U.S. Cl. 280—36 R **1 Claim**



Article carrying and transporting device includes a platform mounted on casters with side flap members extending upwardly from the platform for engagement with the sides of an article such as luggage, and readily detachable securing means for effecting a connection between the free ends of the flap members and across said article.

3,693,995

Patent Not Issued For This Number

3,693,996

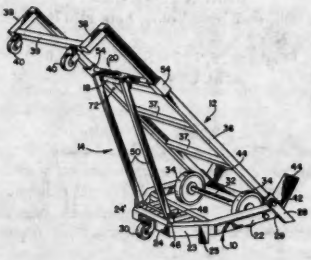
PORTABLE HAND TRUCK

Joseph Hardy, 7335 S. Cottage Grove Ave., Chicago, Ill.

Filed May 13, 1970, Ser. No. 36,712

Int. Cl. B62b *3/00*

U.S. Cl. 280—47.34 **3 Claims**



A hand truck comprising a base carriage having rollers or wheels, a frame pivotally supported on said base carriage at the forward end of the base carriage, the frame having a pair of spaced side members, a cross member slidably supported on said side members, locking means on said cross member and engaging said side members for locking said cross member relative to said side members, and bracing means pivotally connected at one end to said base carriage and connected at its other end to said cross member for supporting said frame in any adjusted upright position, said frame member positionable to a horizontal position so that said hand truck may be used as a flat bed truck or dolly.

3,693,997

ADJUSTABLE STEERING COLUMN FOR MOTOR VEHICLES

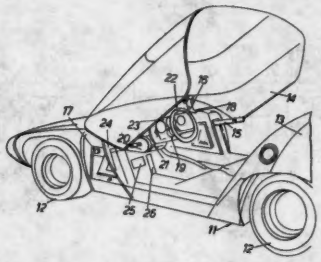
Hans Dreyer, Russelsheim, Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed March 5, 1971, Ser. No. 121,349

Claims priority, application Germany, March 11, 1970, P 20 11 606.7

Int. Cl. B62d *1/18*

U.S. Cl. 280—87 A **9 Claims**



This invention relates to an adjustable steering column for a motor vehicle in which the position within the vehicle of a steering wheel attached to the upper end of the steering column can be readily adjusted by adjusting the overall length and the inclination of the adjustable steering column.

3,693,998

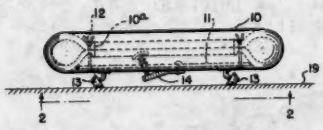
CASTERED PLATFORM-TYPE PLAY EXERCISER

Alfred B. Cummins, 401 Miles Run, Chagrin Falls, Ohio

Filed Oct. 2, 1970, Ser. No. 77,636

Int. Cl. B62b *1/00*; B62k *9/00*

U.S. Cl. 280—87.01 **2 Claims**



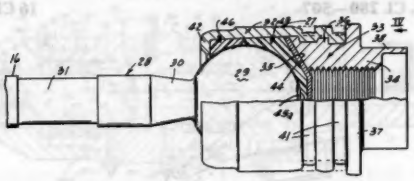
A play and exerciser attachment for use with a used automobile tire is presented. A generally circular platform of wood, plastic, metal or the like, having a diameter greater than the bead of the tire and less than the outside diameter of the tire is secured thereto, in the present case, by rope laces (for non-wearing yield) passed through holes drilled in the tire. Universal swiveling casters are mounted to the underside of the platform to support the entire device on a flat surface so that it rolls easily in any direction. Preferably a brake is mounted on the platform adapted to be moved into engagement with the flat supporting surface such as a floor by the use of the hand or foot of the operator so as to aid in control of the movement of the exerciser device.

3,693,999

RACK AND PINION STEERING ASSEMBLY

Ruey E. Wood, Jr., Eastlake, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed May 4, 1970, Ser. No. 34,156
Int. Cl. B62d 3/12; F16c 11/08
U.S. Cl. 280—95 12 Claims



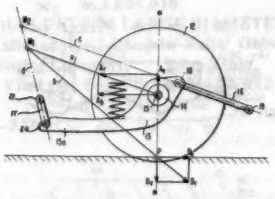
A rack and pinion steering assembly for automobiles and the like dirigible wheel equipped vehicles having a longitudinally driven rack bar connected to wheel turning tie rod linkage by plastic bearing ball and socket joints which are greased for life, automatically take-up wear, minimize transfer of road shock to the rack bar, prevent transfer of twisting loads to the rack bar, will maintain a predetermined load torque during articulation, and do not require induction hardened ball studs. The preferred plastic bearing for the ball and socket joint has a plastic cup part between the ball end of the stud and the rack bar composed of a plastic which has a high resilience and a low coefficient of friction. A second bearing part composed of a plastic ring envelopes the ball end of the ball stud opposite the cup bearing and is stiff with a high resistance to flow under load and also having a low coefficient of friction. A housing preloads the two bearing parts around the stud head compressing the resilient bearing cup so that it may expand as wear develops during use thereby preventing looseness in the joint. The joint housing is preferably in the form of a tube which is easily and inexpensive attached to the end of the rack bar.

3,694,000

REAR AXLE SUSPENSION OF MOTOR VEHICLES

Friedrich H. Van Winsen, Kirchheim/Teck, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

Filed April 17, 1970, Ser. No. 29,483
Claims priority, application Germany, April 23, 1969, P 19 20 705.7
Int. Cl. B60g 3/00
U.S. Cl. 280—124 R 47 Claims



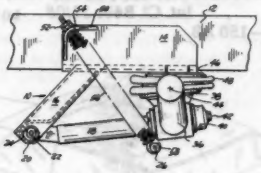
A rear axle suspension of motor vehicles in which a wheel carrier is connected with the vehicle superstructure by way of a lower guide member and an upper guide member whereby the wheel carrier is extended forwardly, particularly in its lower part and the point of pivotal connection of the lower guide member at the wheel carrier is arranged at a relatively large distance forwardly of the vehicle transverse plane passing through the wheel center while the straight line connecting the joints of the lower guide member extends upwardly at a relatively steep incline.

3,694,001

CONSTANT MOMENT COIL SPRING - AIR BAG SUSPENSION

Donald J. McGee, Troy, Mich., assignor to Dura Corporation, Southfield, Mich.

Filed Aug. 31, 1970, Ser. No. 68,387
Int. Cl. B60g 11/56
U.S. Cl. 280—124 F 12 Claims



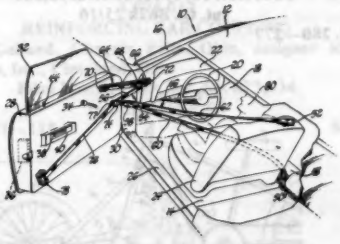
This invention relates generally to a suspension for motor vehicles. The axle to which the suspension is attached can be raised or lowered by deflating or inflating respectively an air bag between an axle and the frame of the vehicle. A beam fixed to the axle pivots on a bracket attached to the frame. A coil spring, resisting extension thereof, has the ends thereof fixed to the frame and the beam near the axle. The coil spring is arranged with the combination of elements as above set forth in such a manner that the vertical movement of the axle results in a substantially constant moment being exerted by the spring on the beam about its aforementioned pivoting on the bracket.

3,694,002

CONTROL BELT SYSTEM FOR A VEHICLE BODY OCCUPANT RESTRAINING BELT ARRANGEMENT

Richard E. Fancy, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 18, 1971, Ser. No. 144,524
Int. Cl. B60r 21/10
U.S. Cl. 280—150 SB 3 Claims



A control belt system for a vehicle body occupant restraining belt arrangement including lap and shoulder belt portions disposed across a vehicle body seat with the outboard ends secured to each other and slidably receiving a first apertured member adjacent a forwardly pivoting vehicle body door. The control belt system includes a first control belt with one end attached to the first apertured member, a plurality of body and door mounted slide members between which intermediate portions of the first control belt extend and slide over in a tackle arrangement to move the first apertured member and the lap and shoulder belt portions forwardly to easy-enter positions during door opening movement, a second control belt with one end secured to a second apertured member slidably received on the first control belt adjacent the first apertured member, and a door mounted retractor with a normally retracting rotatable reel selectively locked against belt extending movement and receiving the other end of the second control belt which is retracted during door closing movement to move the lap and shoulder belt portions rear-

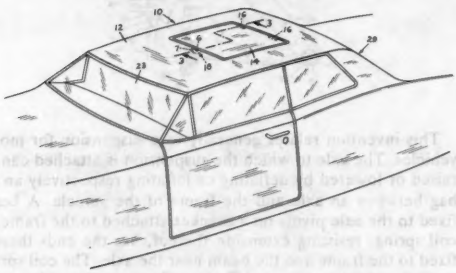
wardly to occupant restraining positions with respect to a seated occupant.

3,694,003

PRESSURE RELIEF PANELS FOR GAS BAG EQUIPPED VEHICLES

Donald G. Radke, Troy, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Jan. 11, 1971, Ser. No. 105,443
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **8 Claims**



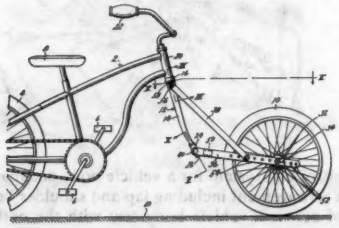
A pressure relief means is provided in a vehicle equipped with a gas bag restraint system for use in the event the vehicle is involved in an impact. A biased panel, in communication with the passenger compartment and the vehicle surroundings, is held down against the bias of the panel, which urges the panel open. Upon impact of the vehicle, the gas bags inflate, tending to increase the pressure in the passenger compartment. Simultaneously, the panel hinges are detonated, causing the panel to open to prevent the buildup of pressure in the passenger compartment of the vehicle.

3,694,004

FRONT WHEEL MOUNTING FOR BICYCLES

Aloysius F. Siebers, 7632 Robinson St., Overland Park, Kans.

Filed Nov. 18, 1970, Ser. No. 90,561
Int. Cl. B62k *25/16*
U.S. Cl. 280—277 **3 Claims**



A front wheel mounting for bicycles consisting of a pair of arms adapted to be pivoted at their rearward ends to lower ends of the usual fork legs of the bicycle for vertical pivotal movement, the front cycle wheel being rotatably mounted between said arms at selective points along the lengths thereof, and a pair of angled struts each pivoted at its lower end to one of said arms at selective points along the length thereof, and at its upper end to the associated fork leg in spaced relation above the connection of said arm thereto, said struts being resiliently yieldable in compression whereby to provide a spring mounting for said front cycle wheel.

3,694,005

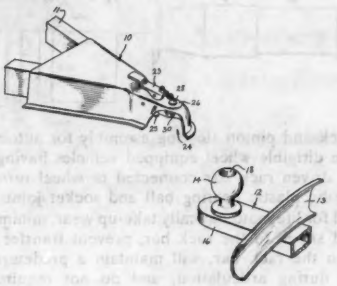
Patent Not Issued For This Number

3,694,006

HITCH COMBINATION FOR PREVENTING THE COUPLING OF TWO VEHICLES HAVING MISMATCHING VEHICLE CHARACTERISTICS

Arthur L. Good, and Robert P. Reese, both of Elkhart, Ind., assignors to Reese Products, Inc., Elkhart, Ind.

Filed Nov. 27, 1970, Ser. No. 93,187
Int. Cl. B60d *1/06*
U.S. Cl. 280—507 **16 Claims**



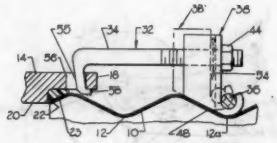
A hitch combination which includes a hitch constituting a part of one vehicle and a coupler constituting a part of another vehicle. The one vehicle includes a first key device which is correlated to a certain characteristic of the vehicle. The other vehicle includes a second key device which is correlated to a certain characteristic of the other vehicle. The key devices of the vehicles have interfering parts which serve to prevent securement of the coupler to the hitch when there is a mismatch of vehicle characteristics. When there is a match of vehicle characteristics, the key devices of the vehicles cooperate so as to permit the securement of the coupler to the hitch.

3,694,007

PIPE AND END ATTACHMENT

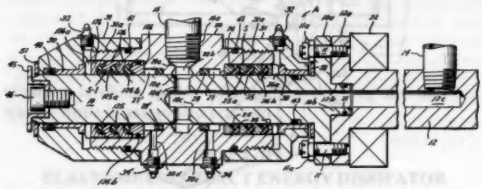
Harold E. Crow; Joseph Moffa, and C. Frederick Berge, all of Middletown, Ohio, assignors to Armco Steel Corporation, Middletown, Ohio

Filed Nov. 23, 1970, Ser. No. 91,821
Int. Cl. F16l *23/00*
U.S. Cl. 285—5 **13 Claims**



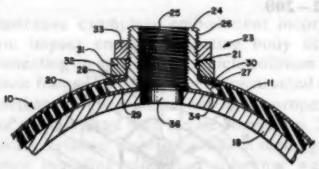
An adjustable joint coupling assembly for joining a pipe having an annular corrugation thereabout to an end attachment, such as a gate for controlling the flow of fluid through said pipe, a second pipe in end-to-end relationship, or a cap to stop any fluid flow therethrough, said assembly comprising a plurality of clamping members each having an arm pivotal about one end thereof in a plane substantially parallel to the axis of said pipe, and means for securing said arm to said pipe and restricting its movement to within said plane. The opposite end of said arm is provided with means for engagement with said end attachment to securely hold same against said pipe, whereby to provide a substantially leak resistant joint.

3,694,008
ROTATING JOINT
Damon T. Slator, and Albert L. Burns, Jr., both of Houston, Tex., assignors to Bowen Tools, Inc.
Filed Oct. 27, 1970, Ser. No. 84,415
Int. Cl. F16l 27/00
U.S. Cl. 285—94 6 Claims



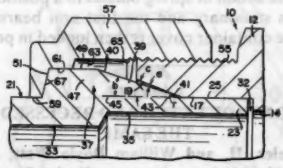
A rotating joint for connecting a fixed pipe to a rotating pipe and for providing a fluid seal for fluid flowing through the joint, wherein the joint has a pair of spaced seals which are subjected to fluid pressure acting in the joint in opposite directions to substantially equalize the thrust on the joint by the fluid flowing therethrough.

3,694,009
PIPE SADDLE
Robert F. Phillips, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.
Filed Dec. 28, 1970, Ser. No. 102,017
Int. Cl. F16l 41/00
U.S. Cl. 285—197 5 Claims



A pipe saddle for attaching service lines to large-diameter pipelines or service mains. The saddle includes a split, flexible, cylindrical strap adapted to be clamped around the pipeline. The strap provides a generally cylindrical opening therein in which is received a coupling fitting which accommodates a standard corporation stop valve for subsequent connection of the service line thereto.

3,694,010
TUBE COUPLING FOR LARGE DIAMETER TUBES
Francis J. Callahan, Jr., Chagrin Falls, Ohio, assignor to Crawford Fitting Company, Solon, Ohio
Filed Oct. 5, 1970, Ser. No. 78,052
Int. Cl. F16l 25/00
U.S. Cl. 285—334.4 13 Claims

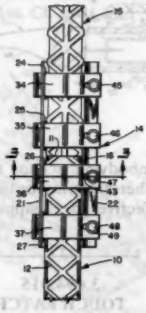


A tube coupling for large diameter tubes is comprised of a coupling body having a camming mouth, a tube stub with an integra ferrule, and a coupling nut adapted to retain the ferrule of the tube stub in sealing engagement with the camming mouth. The tube stub is adapted to be interconnected into a fluid line by welding or otherwise securing the free end of the tube stub to a tube or other conduit.

3,694,011
COUPLING
Arthur A. Silverman, 2245 Harmain Road, Pittsburgh, Pa.
Filed Nov. 23, 1970, Ser. No. 91,834
Int. Cl. F16d 1/00
U.S. Cl. 287—104 8 Claims

A coupling particularly adaptable for readily connecting and disconnecting sections of sewer snake having a male member and a female member wherein the former is slidable within a transverse slot provided in the latter. Rotatable locking means is mounted on the female member which is capable in one position to permit the reception of the connecting end of the male member in the female transverse slot end in a second position to retain the male member in locked engagement within the female member transverse slot. Means is provided to releasably retain the rotatable locking means in the second mentioned position.

3,694,012
REINFORCING BAR COUPLING
Leonard Gelfand, Chagrin Falls, Ohio, assignor to Erico Products, Inc., Cleveland, Ohio
Filed Nov. 4, 1969, Ser. No. 873,834
Int. Cl. F16b 2/08
U.S. Cl. 287—110 8 Claims



A coupling for concrete reinforcing and like bar particularly suitable for compressive loading which comprises a generally U-shape element adapted to embrace the butted ends of such bar with transverse clamp straps extending between the legs of such element being individually tightenable so that the coupling can be secured first to one bar and then the other.

3,694,013

SCREW CONNECTIONS FOR STRUCTURES SUCH AS ROOF SKYLIGHTS

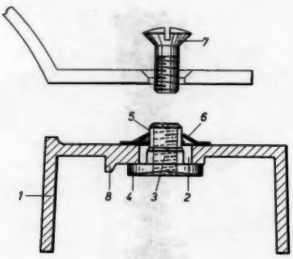
Alfred Heitner, Buttgen, Germany, assignor to Klaus Esser KG, Norf, Germany

Filed Jan. 22, 1971, Ser. No. 108,737

Claims priority, application Germany, Jan. 23, 1970, G 70 02 316.4

Int. Cl. F16b *5/02*

U.S. Cl. 287—189.36 F **1 Claim**



A screw connection for a roof skylight comprises a screw which passes through a shell forming a light dome and through a shell mounting frame. Carried in the frame is a nut with a head on the side of the frame remote from the dome, the head preventing the nut from rotating in the frame as the screw is turned by co-operating with a portion of the frame. A locking plate is fitted onto the nut on the side of the frame remote from the nut head, to hold the nut in position in the frame while the nut and screw are not interengaged.

3,694,014

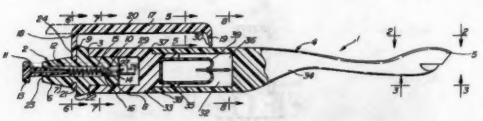
FISHING TOOLS

Donald W. Rossbach, La Grange Park, and Donald E. Etes, Crystal Lake, both of Ill., assignors to Zoo-Lab, Inc., Crystal Lake, Ill.

Filed July 9, 1971, Ser. No. 161,234

Int. Cl. D03j *3/00*

U.S. Cl. 289—17 **10 Claims**



A fishing tool embodying a knot tier with an elongated member extending therefrom in position relative to a portion of the knit tier effective to clampingly engage a carrying member.

3,694,015

TOUCH LATCH

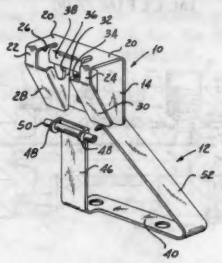
Paul R. Gley, Hillsdale, N.J., assignor to Rex Chainbelt Inc., Milwaukee, Wis.

Filed Sept. 25, 1970, Ser. No. 75,405

Int. Cl. E05c *19/00*

U.S. Cl. 292—80 **6 Claims**

A touch latch assembly for releasably holding a member such as a cabinet door or a lighting fixture lens structure latched in an axis opening in a frame on the cabinet or fixture wherein all the parts of the assembly normally are concealed and in operation of which the door or lens structure is latched closed in response to a first movement thereof into the opening and in which the latch is released in response to a second movement of the door or lens structure in the same direction.



3,694,016

COVER-LOCK FOR CONTAINERS

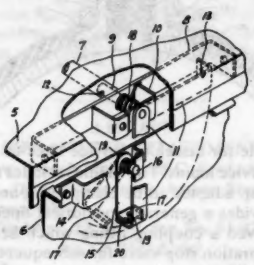
John Patrick Scallan, 84 Killarney Drive, Killarney Heights, New South Wales, Australia

Filed Aug. 31, 1970, Ser. No. 68,334

Claims priority, application Australia, Sept. 1, 1969, 60316/69

Int. Cl. E05c *3/04*

U.S. Cl. 292—200 **11 Claims**



A container has a self-locking assembly for its cover. The locking assembly has a first arm pivoted about a point near one end of a shaft mounted within the container and a second arm pivoted about the exterior surface of a container wall. The second arm has an abutment affixed to its end. On closing the container, the two arms are swung to a position where the first arm is moved underneath the abutment of the second arm, following which the release of the arms allows them to move under the action of spring biasses to a position where the second arm is stationary and the first arm bears against the abutment. The container cover is then locked in position.

3,694,017

REMOTE CONTROL LATCH AND RECESSED BAIL FOR THE SAME

Miner S. Keeler, II, and William Doyle Watt, Jr., both of Grand Rapids, Mich., assignors to Keeler Brass Company, Grand Rapids, Mich.

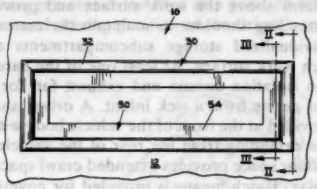
Filed Sept. 30, 1970, Ser. No. 76,727

Int. Cl. E05c *1/12*

U.S. Cl. 292—336.3 **17 Claims**

Recessed pull in which the bail is installed by dropping it

into position from above the assembly. The assembly also includes a latching means actuated by pivoting the bail outwardly while in assembled position.

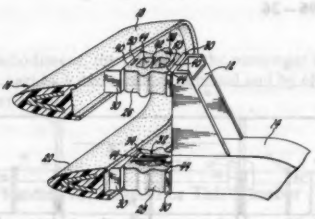


3,694,018

ELASTOMERIC IMPACT ENERGY DISSIPATOR

David R. Levering, Cincinnati, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed July 22, 1970, Ser. No. 57,214
Int. Cl. B60r *19/06*; F60f *1/36*
U.S. Cl. 293—88 4 Claims



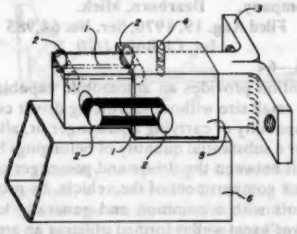
The illustrative exemplary embodiment incorporates the elastomeric impact energy dissipating body as a bumper mount connecting an automotive vehicle collision bumper bar to the vehicle frame. The dissipator is constructed of high density polyurethane or like material having the properties of high modulus of elasticity and high tensile elongation. The dissipator has a cross sectional shape generally of rectangular tubular configuration including elongated columnar wall elements adapted to undergo laterally outward buckling under impact compression loading therein and a tensile web extending laterally between the columnar elements operative to resist the buckling up to a predetermined value, to provide large amounts of energy dissipation along with the remainder of the body during the buckling, and to elastically return the body and the supported bumper bar to its original condition following release of the impact forces.

3,694,019

SINGLE USE INERTIA ABSORBING DEVICE

John Ed Carter, Columbia, S.C., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Nov. 23, 1970, Ser. No. 91,705
Int. Cl. F16f *7/12*
U.S. Cl. 293—101 10 Claims



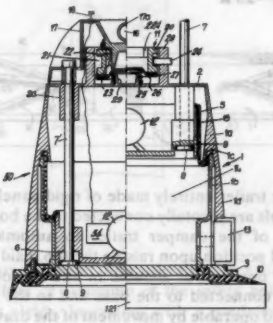
An inertia absorbing device is disclosed to absorb relatively large amounts of inertial energy on a one shot or single use basis. Energy is absorbed by elongating or stretching a thermoplastic structure, such as nylon yarn. One example of an end use would be an energy absorbing system for automobile bumpers to prevent low speed (5–10 mph) collision damage. Nylon yarn is attached to pins between a movable bumper mount and the automobile frame, to be stretched on collision.

3,694,020

SYPHON OR SOLIDS HAVING A PISTON WHICH IS CONNECTED WITH A SUSPENSION ARRANGEMENT

Klaus Becker, Volmarstein, and Karlheinz Wolski, Bochum-Langendreer, both of Germany, assignors to DEMAG Aktiengesellschaft, Duisburg, Germany

Filed May 11, 1970, Ser. No. 36,320
Claims priority, application Germany, May 13, 1969, P 19 24 293.4; July 4, 1969, P 19 34 033.1; Sept. 29, 1969, P 19 49 065.4; Sept. 29, 1969, P 19 49 064.3; Dec. 12, 1969, P 19 62 273.2
Int. Cl. B66c *1/02*
U.S. Cl. 294—64 R 13 Claims



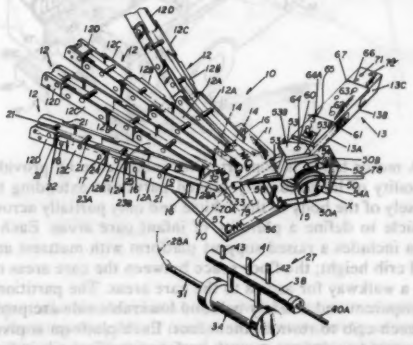
A syphon for solids includes a piston movable in a cylinder to produce an underpressure which is communicated to an attachment for the cylinder in order to permit the attachment to engage the solid material to be lifted. The syphon includes a locking mechanism which connects the cylinder space with the piston during every second stroke of the piston to prevent the formation of a vacuum. The arrangement includes an auxiliary vacuum pump which is connected with the suction space of the cylinder and which is driven by a motor both of which are advantageously carried within the piston.

3,694,021

MECHANICAL HAND

James F. Mullen, First Nat'l Bank Bldg., 22 W. First St., Mt. Vernon, N.Y.

Filed July 31, 1970, Ser. No. 60,030
Int. Cl. A61f *1/06*
U.S. Cl. 294—106 22 Claims



This disclosure is directed to a mechanical hand constructed to simulate the articulated movements of a human hand. The mechanical hand comprises a base member simu-

lating the palm portion of a human hand with a plurality of finger digits and a thumb digit articulated to the base portion. Each finger and thumb digit includes pivotally connected segments or joints to simulate or duplicate the finger and thumb movements of a human hand. Tendons are operatively connected to each of the respective digits to effect the flexing thereof, and an actuator is operatively associated with each of the respective tendons to effect either independent and/or simultaneous actuation of the respective digits for movement between operative and inoperative positions.

3,694,022

FOLDING CAMPER TRAILER

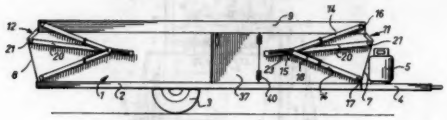
Rene Dontigny, 1006 Vanier Boulevard St., St. Vincent De Paul, Quebec, Canada

Filed Oct. 23, 1970, Ser. No. 83,373

Claims priority, application Canada, Oct. 24, 1969, 065817

Int. Cl. B60p *3/34*

U.S. Cl. 296—23 R **17 Claims**



A camper trailer entirely made of rigid panels and in which certain panels are pivotally connected to the box like base and to the top of the camper trailer to automatically take a straightened position upon raising the top. Said camper trailer has at least one drawer slidable in and out of the base and mechanism connected to the base and to the top for raising the latter and operable by movement of the drawer.

3,694,023

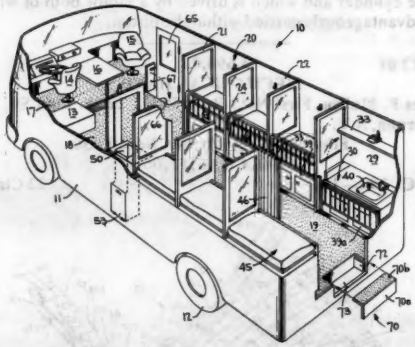
MOBILE NURSERY

Linda C. Burgess, 3525 Davenport St. N.W., Washington, D.C.

Filed Dec. 23, 1970, Ser. No. 101,045

Int. Cl. B60r *15/02*

U.S. Cl. 296—24 R **15 Claims**



A motor home is converted for infant care by providing a plurality of longitudinally spaced partitions extending transversely of the body of the vehicle and only partially across the vehicle to define a plurality of infant care areas. Each care area includes a raised support platform with mattress at normal crib height; the floor space between the care areas defining a walkway for access to the care areas. The partitions are transparent and a safety belt and lowerable side are provided in each crib to restrain the infant. Each platform is pivotally supported to expose a work surface when raised; individual basins and water supply means being provided on each work surface. A stationary ledge is provided to accommodate the mattress on the platform in the raised position and a longitudinally extending vertical panel holds access side of the support platform above the work surface and provides an upwardly extending shoulder to maintain the mattress in position. Individualized storage subcompartments are located below each work surface. At least one of the care areas may include an isolation curtain and exhaust fan for preventing transfer of germs from a sick infant. A driver and attendant area is provided at the front of the vehicle body with the infant care areas extending from the rear of the vehicle forwardly. An open floor space provides extended crawl space for the infants to play. Hatch means is provided for covering the step wells for the doors. A chute is provided for receipt of soiled articles of clothing with a storage bin positioned at the bottom of the chute and having an access door opening from the outside of the vehicle.

3,694,024

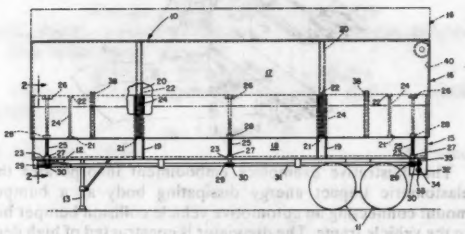
VERTICALLY EXPANSIBLE CARGO VEHICLE BODY

Richard O. Linville, Warren, Mich., assignor to the Budd Company, Philadelphia, Pa.

Filed Dec. 24, 1970, Ser. No. 101,351

Int. Cl. B60p *9/00*

U.S. Cl. 296—26 **1 Claim**



This application discloses a cargo vehicle body which is vertically expansible, having a fixed lower part or portion carried on a chassis and a vertically shiftable upper part or portion in spaced guided telescopic relationship with the lower portion, with elevating and guide means disposed in the space between the telescopic sides and, when desired, resilient or spring means to assist in supporting the upper portion at least in certain positions and latch means for assisting in holding the upper body portion in raised positions and releasable for lowering it. A plurality of lift, guide, spring, and latch means are provided on each side in an effective arrangement to promote smooth even balanced operation. A door is provided which is effective to close its opening in all adjusted positions of the body.

3,694,025

AUTOMOBILE

Gordon M. Buehrig, Laguna Hills, Calif., assignor to Ford Motor Company, Dearborn, Mich.

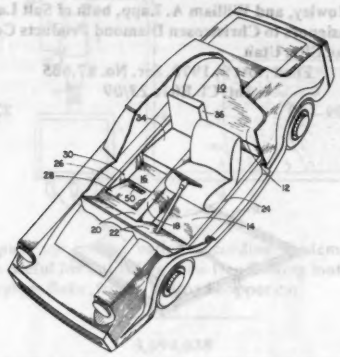
Filed Aug. 19, 1970, Ser. No. 64,985

Int. Cl. B60n *1/10*

U.S. Cl. 296—64 **2 Claims**

The invention provides an automobile capable of production in very small size without sacrificing driver comfort while retaining capability of carrying a passenger or, alternatively, a large load or a substantial quantity of belongings by omitting a dividing wall between the driver and passenger compartment and the trunk compartment of the vehicle, by providing those compartments with a common and generally level floor in which a driver's seat well is formed utilizing an area as large as necessary to insure his maximum comfort and which, in the small sized vehicle, extends halfway or more of the distance across the interior of the driver and passenger compartment.

The floor over the passenger position covers a second well in which a passenger's seat is installed at a position rearward of the most rearward driving position of the driver's seat. In the



preferred embodiment, the floor over the passenger's seat well is formed in part by a convertible toeboard and by elements of the passenger's seat.

3,694,026

Patent Not Issued For This Number

3,694,027

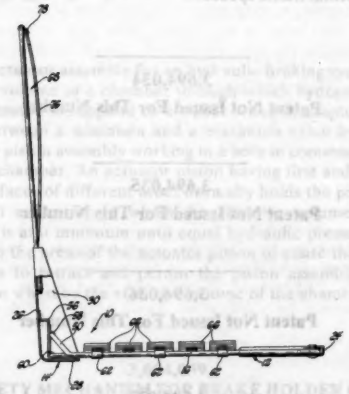
SEAT ASSEMBLY WITH COPLANAR PARALLELOGRAM LINKAGE

Hyland C. Flint, 3551 Walnut Lake Road, Orchard Lake, Mich.

Filed Feb. 19, 1971, Ser. No. 116,848

Int. Cl. A47b *3/10, 3/025*

U.S. Cl. 297—309 **17 Claims**



A spring seat assembly comprising a transversely extending seat support member, a transversely extending backrest support member spaced rearwardly therefrom, and sets of parallelogram arms on opposite sides of the assembly to interconnect the members. The assembly provides a unison action on displacement under load. The parallelogram arms lie in a common horizontal plane over the greater portion of their longitudinal lengths.

3,694,028

ANCHORING ARRANGEMENT OF A SAFETY BELT IN A MOTOR VEHICLE

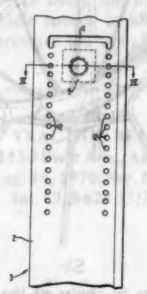
Rudolf Andres, Sindelfingen, and Guntram Huber, Dachtel, Wurttemberg, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkhem, Germany

Filed Dec. 4, 1970, Ser. No. 95,136

Claims priority, application Germany, Dec. 6, 1969, P 19 61 381.1

Int. Cl. A62b *35/60*

U.S. Cl. 297—386 **21 Claims**



A fastening arrangement for a safety belt in a motor vehicle in which the place of fastening of the safety belt is so constructed that it yields, beginning with a predetermined tensional force at the safety belt, while producing at the same time deformation work.

3,694,029

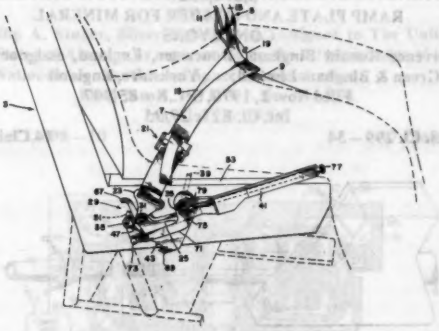
AIRCRAFT SEAT RESTRAINT TENSIONING MECHANISM

Herman Noble, Havertown, and Edward H. Hartel, Secane, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy

Filed Sept. 22, 1971, Ser. No. 182,601

Int. Cl. A62b *35/60*; **B60r** *21/00*

U.S. Cl. 297—389 **6 Claims**



Subject disclosure relates to a novel and improved system for restraining the pilot or occupant in a seat during an emergency situation. The improved system includes a lever assembly which, when operated, draws opposite ends of a lap belt downwardly and forwardly so as to minimize the tendency of the pilot to submarine under the belt.

3,694,030

CHAIRS

Raymond E. Grosfillex, Arbent, France, assignor to Grosfillex S.A.R.L., Arbent, France

Filed Feb. 8, 1971, Ser. No. 113,349
Claims priority, application France, Feb. 11, 1970, 7004854
Int. Cl. A47c 7/00, 7/20
U.S. Cl. 297—445 5 Claims

This invention relates to chairs of the kind comprising a rigid base and a combined seat and back member of roughly hemispherical shape that is detachably securable to the base. According to this invention, the seat and back member comprises a layer of a plastics material which is moulded in the flat to a generally circular shape to consist of a plurality of panels radiating from a central area to which they are secured. These panels are separated from each other by slots and, on the underside of each member, there is one or more clips arranged to engage over a circular supporting member on the base. The panels may have a radially outwardly located rib to hide the clip or clips. In one particular embodiment, the radiating panels are formed like the petals of a flower: the plain central area is eccentric with respect to the circle circumscribing the peripheries of the panels and forms the seat portion.

3,694,031

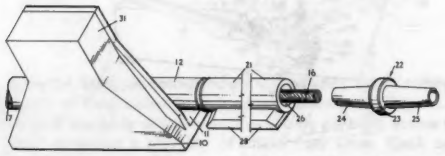
Patent Not Issued For This Number

3,694,032

RAMP PLATE AND LOADER FOR MINERAL CONVEYORS

Terrence Ronald Bingham, Doncaster, England, assignor to Green & Bingham Limited, Yorkshire, England

Filed Nov. 2, 1970, Ser. No. 85,907
Int. Cl. E21c 27/35
U.S. Cl. 299—34 14 Claims



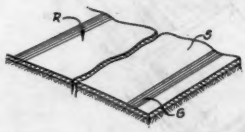
The invention discloses space-clearing means for use particularly in long-wall mining, comprising a train of ploughs mounted for movement along a guide ramp on the face side of a conveyor. The ploughs are linked by means transmitting both tension and compression and means are provided whereby a cutting machine can engage any selected plough of the train to push or pull the ploughs in any combination, in either direction of the machine.

3,694,033

ROADWAY PAINT STRIPE GROOVING MACHINE

David S. Rowley, and William A. Lapp, both of Salt Lake City, Utah, assignors to Christensen Diamond Products Company, Salt Lake City, Utah

Filed Nov. 9, 1970, Ser. No. 87,685
Int. Cl. E01c 23/09
U.S. Cl. 299—39 22 Claims



A machine for cutting grooves and intervening ridges in a roadway to receive a reflective paint and function as lane dividers. A self-propelled vehicle has a power transmission for rotating a cutter to cut the grooves to a predetermined depth as the vehicle moves along the roadway at a relatively slow speed, the cuttings being flushed from the roadway surface by water which cools and cleans the cutter, vacuum apparatus sucking the water and cuttings from the roadway surface to a separator tank for separation of the air and slurry, a slurry pump transferring the slurry to a tank for separation of the cuttings from the water. A prime mover and power transmission separate from the normal vehicle power train can drive the vehicle at a relatively slow but variable speed during the cutting operation, and at a faster speed when the vehicle motion is reversed with the cutter disengaged from the roadway surface or the cutter is otherwise disengaged. The separate prime mover and transmission are ineffective with the cutter elevated from the roadway surface when the normal vehicle power train is operative to permit highway travel of the vehicle at normal traffic speeds.

3,694,034

Patent Not Issued For This Number

3,694,035

Patent Not Issued For This Number

3,694,036

Patent Not Issued For This Number

3,694,037

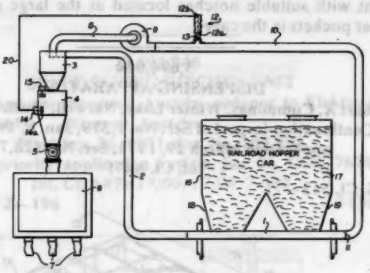
CLOSED CIRCUIT PNEUMATIC CONVEYING

Friedhelm R. Feder, Memphis, Tenn., assignor to Wedco, Inc., Garwood, N.J.

Filed April 30, 1970, Ser. No. 33,468
Int. Cl. B65g 53/06, 53/28, 53/66
U.S. Cl. 302—22 3 Claims

A closed circuit pneumatic conveying systems for conveying finely divided solids comprising, in a loop, a pick-up station, separator, air pump, and a return air conduit vented to

the atmosphere. A throttle valve is interposed between the return air line and the vent. By adjusting the throttle valve, the



rate of pick up can be varied according to demand. The system is useful for unloading semi-free flowing material, e.g. polypropylene flake, from a railroad hopper car.

3,694,038

ACTUATOR ASSEMBLIES FOR HYDRAULIC BRAKING SYSTEMS

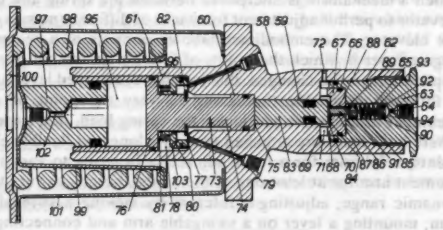
Brian Ingram, Balsall Common; David Anthony Harries, Solihull, and Lancelot Phoenix, Hardsworth, Birmingham, 20, all of England, assignors to Girling Limited, Tyseley, Birmingham, England

Filed Sept. 17, 1970, Ser. No. 73,202

Claims priority, application Great Britain, Sept. 17, 1969, 45,705/69; Jan. 6, 1970, 531/70; March 18, 1970, 13,117/70

Int. Cl. B60t *8/06, 8/12*

U.S. Cl. 303—21 F **16 Claims**



In an actuator assembly for an hydraulic braking system the effective volume of a chamber through which hydraulic fluid under pressure is supplied to a wheel brake is adapted to be varied between a minimum and a maximum value by movement of a piston assembly working in a bore in communication with the chamber. An actuator piston having first and second different faces of different areas normally holds the piston assembly in a position in which the effective volume of the chamber is at a minimum until equal hydraulic pressures are applied to the areas of the actuator piston to cause the actuator piston to retract and permit the piston assembly to be withdrawn whereby the effective volume of the chamber is increased.

3,694,039

SAFETY MECHANISM FOR BRAKE HOLDER OF AUTOMOTIVE HYDRAULIC BRAKE SYSTEM

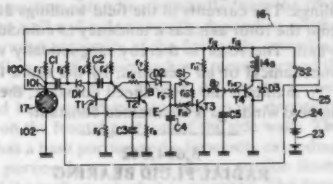
Tsuneo Kawabe; Naoji Sakakibara, and Yasuhiro Kawabata, all of c/o Aisin Seiki Company Limited 1, Tenno, Takaokashinmachi, Toyota-shi, Aichi-ken, Japan

Filed Dec. 31, 1969, Ser. No. 889,576

Int. Cl. B60t *8/08*; **F16d** *67/02*

U.S. Cl. 303—21 CF **7 Claims**

A hydraulic brake system including a brake holder for holding a vehicle still after it has stopped is improved by using a signal generator producing pulses proportional to the rotation of one of the wheels, a circuit for integrating the pulses to a corresponding voltage, and apparatus for delaying the actuation of the control valve until the integrated voltage drops to a



predetermined value to delay the brake holder for longer times at higher vehicle speeds to allow the driver time to release the brake pressure for wheel-locking or skidding at higher speeds.

3,694,040

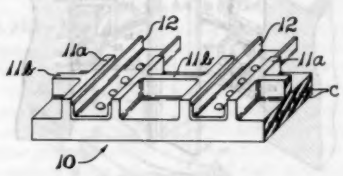
TRACTION BELT

Allan D. Hallaman, 1156 Dietz Ave., Akron, Ohio

Filed Aug. 19, 1970, Ser. No. 65,060

Int. Cl. B62d *55/24*

U.S. Cl. 305—38 **2 Claims**



An endless traction belt for vehicles having at least two endless bands laterally spaced, the bands being transversely interconnected by grouser bars attached to the outer surface of the bands. The grouser bars are longitudinally spaced on the bands with the region laterally intermediate the bands adapted to be contacted by driving-sprocket teeth. Transverse lugs of elastomeric material are formed on the outer periphery of the bands to a greater height than the grouser bars and the lugs are disposed closely adjacent opposite sides of each grouser bar such that the grouser bars are recessed between and supported by the lugs to prevent shearing of the grouser attaching means.

3,694,041

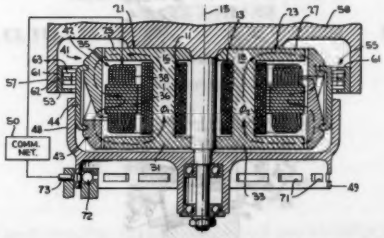
ELECTRIC MOTIVE MACHINE INCLUDING MAGNETIC BEARING

Philip A. Studer, Silver Spring, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Jan. 8, 1971, Ser. No. 104,884

Int. Cl. F16c *39/06*

U.S. Cl. 308—10 **17 Claims**



A d.c. motor includes a plurality of stationary field windings and a stationary armature winding. Magnetic fluxes derived from the field windings interact with currents in the armature winding to produce a torque that rotatably drives a rotor

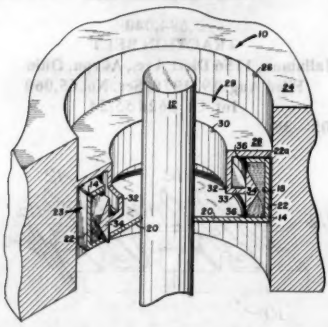
about an axis that has a tendency to coincide with a common longitudinal axis for the armature and field windings. The displacement of the rotor axis relative to the common axis is sensed to provide a signal for controlling the currents in the field windings. The currents in the field windings displace the rotor so that the rotor axis has a tendency to coincide with the common axis. The rotor is thereby magnetically suspended, without mechanical or air bearings, by the same forces that rotate it. To maintain the rotor speed constant, the total current in the field windings is maintained constant.

3,694,042

RADIAL FLUID BEARING

David W. Rabenhorst, Silver Spring, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Filed March 1, 1971, Ser. No. 119,501
Int. Cl. F16c *33/72*
U.S. Cl. 308—36.3 7 Claims



The invention comprises related embodiments of a basic rotary bearing having primarily effective sealing and either radial loading or thrust loading. Journaling capability is realized by holding a stationary annular member having a substantially triangularly cross-sectional flange within a high density fluid centrifugally retained within a rotary annular cavity. Imposition of a radial load on the structure biases the stationary annular member into the fluid until the buoyant force exerted on said member by the fluid equals the imposed load. In another embodiment having thrust loading capability, the stationary member comprises a disc-like thrust plate held within a rotating cavity, the outer annular edges of the plate being immersed in a fluid held along the inner periphery of the cavity by the rotary motion thereof.

3,694,043

RETAINING RING AND CAGE FOR UNIT ASSEMBLY OF TAPERED BEARING COMPONENTS

Joseph W. Tellson, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed July 26, 1971, Ser. No. 165,954
Int. Cl. F16c *33/00, 33/46*
U.S. Cl. 308—214 4 Claims

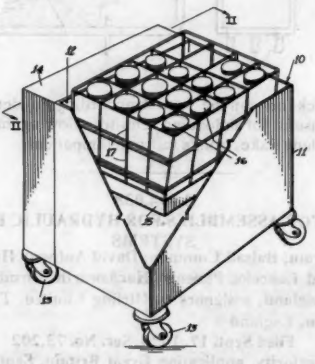
A tapered roller bearing having a non-shouldered outer race, an inner race with a shoulder at its large diameter end, a cage having roller pockets to receive rollers and a ring having radially projecting tangs thereon extending from an annular skirt with the tangs positioned to snap into locking engagement with suitable notches located at the large end of the roller pockets in the cage.

3,694,044

DISPENSING APPARATUS

Gilbert A. Cummings, Winter Lake, Norwell, Mass.

Continuation-in-part of Ser. No. 1,379, Jan. 8, 1970. This application March 29, 1971, Ser. No. 128,708
Int. Cl. A47f
U.S. Cl. 312—71 15 Claims



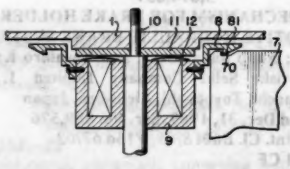
This invention has to do with a dispensing apparatus of the self-leveling balanced beam or lever type in which one load, an elevator, is balanced by another load, a spring, and in which a mechanism is interposed between the spring and the elevator to permit adjustment for stacks of different masses on the elevator. The embodiment shown consists of a second-degree lever in which the points of fulcrum action and force application can be changed. Illustrated are: a curved lever and a follower adjustable therealong to vary the point of attachment of a load, in particular the spring load, in a system where both loads are attached through elongated flexible elements; a fulcrum for a lever adjustable in space to vary the moment arm for at least one of the loads, thereby to vary the dynamic range; adjusting a fulcrum by moving a swingable arm; mounting a lever on a swingable arm and connecting a load to the lever at a distance from this connection corresponding to the arm length by means of an elongated flexible element that passes about a pulley near the mounting of the swingable arm, thence to the load; and a system of stationary axis pulleys with any of the above, permitting straight line movement of the loads while permitting rotation of the lever assembly.

3,694,045

MAGAZINE FOR CARD RETRIEVAL

Takeshi Okano, Mishinomiya, Japan, assignor to Fuji Shashin Film Kabushiki Kaisha, Kanagawa-ken, Japan

Filed April 20, 1971, Ser. No. 135,650
Claims priority, application Japan, May 18, 1970, 45/41887
Int. Cl. B42f *17/16*
U.S. Cl. 312—186 8 Claims



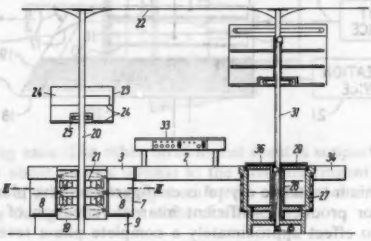
A cylindrical magazine body loaded with a number of radially disposed cards is provided with a retainer ring for retain-

ing the cards by engagement with a notch formed in the inner upper edge of each card. The retainer ring retains the cards by gravity and releases the same when moved upwards by electromagnet.

3,694,046
SPACE SAVING KITCHEN UNIT

Hasso Gehrmann, Bregenz, Austria, assignor to Elektra-Bregenz GmbH, Bregenz, Austria

Filed Jan. 26, 1971, Ser. No. 109,803
Claims priority, application Austria, Jan. 26, 1970, 7670
Int. Cl. A47b *17/00, 19/00, 77/08*
U.S. Cl. 312—196 **10 Claims**

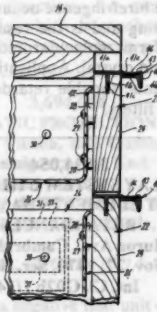


A space saving kitchen unit incorporating kitchen appliances and equipment with a working and an eating surface, includes a table member providing a support surface into one end of which a horizontally arranged rotatable disc is fitted with a refrigerator unit built into the other end and a working station being located at one side of the support surface between its ends. The rotatable disc includes heating elements for cooking, a sink, a garbage disposal container, and compartments for appliances. Further, storage shelves are secured to and below the disc within an enclosing shell to which an access opening is formed. A dishwasher can be provided centrally within the shell extending downwardly from the upper surface of the disc. Support columns with lifting mechanisms are associated with the dishwasher and refrigerator unit for lifting inserts within these units to a position above the support surface where they are accessible from the working station. Additional storage shelves can be located within casings at the upper ends of the support columns so that they can be lowered for access from the working station.

3,694,047
CABINET CONSTRUCTION

Allen E. Inhelder, Palo Alto, Calif., assignor to J. W. Cross Co., Palo Alto, Calif.

Filed Sept. 8, 1970, Ser. No. 70,241
Int. Cl. A47b *81/00*; B42f *21/00*
U.S. Cl. 312—234 **10 Claims**

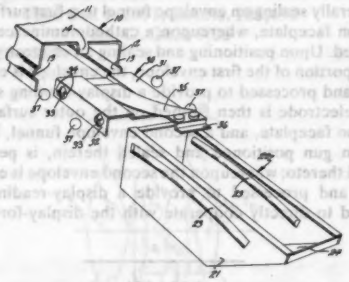


A cabinet construction formed of an enclosure having a pair of spaced parallel side walls, spaced parallel top and bottom walls, a rear wall and an open front side. At least one drawer is slidably mounted in the enclosure for movement through the front side. The drawer has a generally vertical front wall. A drawer pull is mounted on the front wall of the door and extends laterally of the drawer. The drawer pull has a forwardly extending portion extending forwardly from the front surface of the front wall and a downwardly depending portion adjoining the forward extremity of the forwardly extending portion. A forwardly extending portion has a recess formed therein extending transversely of the drawer. An insert is mounted in the recess and has printed indicia thereon. A decorative trim is mounted on the frontal portions of the side walls. The decorative trim has a base portion and a forwardly extending portion. The base portion has a vertical planar portion flush with the surface of the wall on which it is mounted. The forwardly extending portion has a planar vertical surface extending at right angles to the vertical surfaces on said base portion. The forwardly extending portion has an arcuate surface extending from said planar vertical surface on said base portion to the planar vertical surface of the forwardly extending portion.

3,694,048
MOVABLE COMPARTMENT

Forest L. Middleton, Middleville, Mich., assignor to Lescoa, Inc., Grand Rapids, Mich.

Filed Sept. 28, 1970, Ser. No. 75,978
Int. Cl. A47b *88/14*
U.S. Cl. 312—246 **3 Claims**

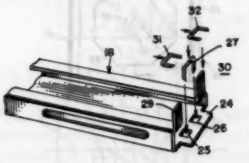


A movable compartment having a pair of mounting members spaced laterally from each other, each one having a pair of tracks at its sides, a pair of supports associated with the mounting members, each support having a pair of tracks at its sides, a box secured at each of its sides to one of the supports, ball bearings positioned between the mounting members and the supports lying in the tracks therein and means retaining the ball bearings in that position whereby the box is movable with respect to the mounting members through the ball bearings rolling in the tracks in the mounting members and the supports.

3,694,049
DRAWER SLIDE STRUCTURE

Kenneth H. Gutner, 3285 Dato, Highland Park, Ill.

Filed Aug. 3, 1971, Ser. No. 168,695
Int. Cl. A47f *5/08*
U.S. Cl. 312—347 **5 Claims**



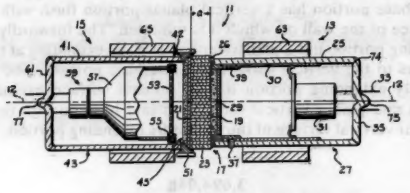
A channel-shaped slide for the under side of a drawer having securing means at each end and additional tab means for stabilizing the slide in place against detachment.

3,694,050

METHOD OF FABRICATING A SCAN CONVERSION DEVICE

Harry E. Smithgall, and Elmer O. Stone, both of Seneca Falls, N.Y., assignors to Sylvania Electric Products Inc.

Division of Ser. No. 886,109, Dec. 18, 1969, Pat. No. 3,624,442. This application Aug. 4, 1971, Ser. No. 168,996
Int. Cl. H01j 9/18
U.S. Cl. 316—19 8 Claims



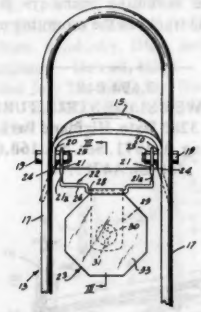
A method is provided for fabricating an improved scan-conversion device formed as a combination of two separate cathode ray tube sections utilizing a common faceplate portion therebetween. The method of fabrication embodies peripherally sealing an envelope funnel to a first surface of the common faceplate, whereupon a cathodoluminescent screen is formed. Upon positioning and sealing an electron gun in the funnel portion of the first envelope, the envelope is evacuated, sealed and processed to provide a display-forming section. A target electrode is then formed on the outer surface of the common faceplate, and a second envelope funnel, having an electron gun positioned and sealed therein, is peripherally bonded thereto; whereupon the second envelope is evacuated, sealed and processed to provide a display-reading section oriented to directly cooperate with the display-forming section.

3,694,051

BICYCLE REFLECTOR AND HANGER THEREFOR

Walter Dian, Downers Grove, Ill., assignor to Excel, Incorporated, Franklin Park, Ill.

Filed Dec. 30, 1970, Ser. No. 102,646
Int. Cl. G02b 5/12
U.S. Cl. 350—97 3 Claims



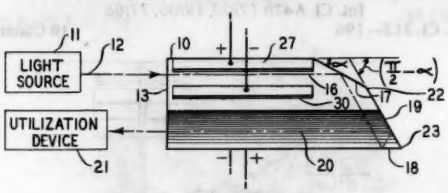
Bicycle reflector and hanger, hanging the reflector from the seat of a bicycle to maintain the reflective face of the reflector in a generally vertical position regardless of the angle of bicycle and seat relative to the vertical.

3,694,052

ELECTROOPTIC MODULATOR UTILIZING PHASE RETARDATION EFFECT OF INTERNAL REFLECTIONS

William Charles Gormley Ortel, New York, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 1, 1971, Ser. No. 111,258
Int. Cl. G02f 1/26
U.S. Cl. 350—150 10 Claims



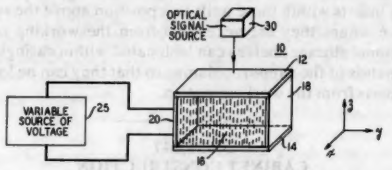
A lithium tantalate crystal is configured to have plural surfaces for producing sufficient internal reflection of a light beam to effect approximately a complete phase reversal of one component of the electric vector, which vector is transverse to the direction of propagation, of the beam within the crystal between two separate electrooptic modulation operations on the same beam within that crystal.

3,694,053

NEMATIC LIQUID CRYSTAL DEVICE

Frederic Jay Kahn, Madison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 22, 1971, Ser. No. 155,435
Int. Cl. G02f 1/16
U.S. Cl. 350—150 9 Claims



A device characterized by an electronically-tunable optical birefringence over the range of 0.0 to 0.2 for applied voltages below 25 volts rms includes a thin film of a nematic liquid crystal. The tunable birefringence occurs below the threshold for dynamic scattering and is the result of electric-field-induced spatially-uniform molecular reorientation in a well-aligned nematic liquid crystal. Applications for such a cell include display elements, tunable retarders, color modulators and variable density filters.

3,694,054

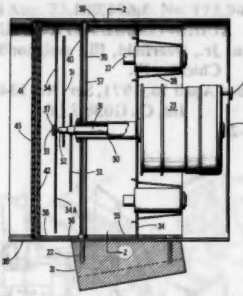
COLOR DISPLAY SYSTEM UTILIZING PLURAL BIREFRINGENT ELEMENTS HAVING DIFFERENT RETARDANCES

Jordan Kirsch, 78 Huron Ave., Cambridge, Mass.

Filed Nov. 27, 1970, Ser. No. 93,051
Int. Cl. G02b 1/24
U.S. Cl. 350—157 9 Claims

A color-display system embodied in a clock mechanism wherein the face of the clock constantly changes color. A pair of transparent, light-polarizing sheets are arranged parallel to one another with one of the sheets forming the face of the

clock. A pair of birefringent sheets are positioned between the polarizing sheets with one of the sheets having a greater retardance than the other. This one sheet is arranged with one of the principal axes at a fixed 45° angle relative to each of the



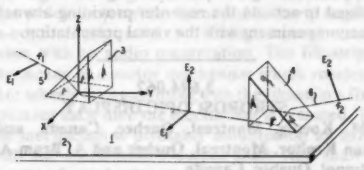
polarizing axes. The other birefringent sheet is supported for rotation about an axis normal to the first birefringent sheet. Rotation of this birefringing sheet by the clock mechanism effectively changes the color of the clock face.

3,694,055

THIN FILM, BIAXIALLY BIREFRINGENT NONLINEAR DEVICES

John George Bergman, Jr., Morganville; James Hoffman McFee, Colts Neck, and Ping King Tien, Chatham Township, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed March 12, 1971, Ser. No. 123,679
Int. Cl. H03f 7/00
U.S. Cl. 350—157 **13 Claims**



Phase matching for different frequency waves of electromagnetic energy is accomplished within a thin film of nonlinear material in which the index of refraction for a wave polarized orthogonal to the plane of the film is lower than that for a wave to which it is coupled which is polarized parallel to the plane of the film, and in which the index of refraction for waves polarized parallel to the plane of the film differs depending upon beam direction. An exemplary material is polyvinylidene fluoride which is mechanically oriented by biaxial stressing and which is electrically poled.

3,694,056

PANCRATIC PROJECTION LENS

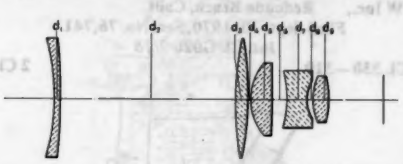
Trude Muszumanski, Vienna, and Gunter Kurz, Vosendorf, both of Austria, assignors to Karl Vockenhuber and Raimund Hauser, Vienna, Austria

Filed Aug. 4, 1970, Ser. No. 60,841
Claims priority, application Austria, Aug. 14, 1969, 7865/69
Int. Cl. G02b 15/14
U.S. Cl. 350—184 **1 Claim**

The lens comprises a negative first unit consisting of a first lens element having a convex rear surface, a positive second lens unit consisting of a biconvex second lens element, which is displaceable along the optical axis of the lens, and a positive main lens unit consisting of a positive third lens element, a negative fourth lens element, and a final lens element. Said lens elements are arranged along the optical axis in the order stated. The main lens unit meets the condition

$$2\,d_6 < d_6 < 4\,d_6$$

wherein d_6 is the vertex distance between the adjacent surfaces of said third and fourth lens elements and d_6 is the vertex



distance between the adjacent surfaces of said fourth and final lens elements. For each of the lens units

$$1.62 \quad n_d \quad 1.67$$

$$33 \quad \nu \quad 61$$

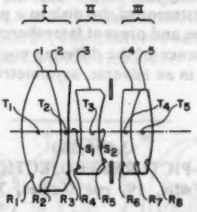
wherein n_d is the index of refraction for the yellow helium line and ν is the Abbe number.

3,694,057

MODIFIED TRIPLETS WITH REDUCED SECONDARY SPECTRUM

William H. Price, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 1, 1971, Ser. No. 185,496
Int. Cl. G02b 9/26
U.S. Cl. 350—227 **6 Claims**



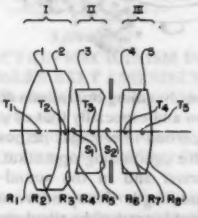
A lens, particularly usable in a printer, consists of a middle negative component surrounded by two positive doublets. Secondary spectrum is reduced by choosing refractive materials and element focal lengths to minimize the expression $(P_m - P_3/V_3 - V_m)$, where P_3 and V_3 are the partial dispersion and Abbe number for the negative component and P_m and V_m are the mean equivalent partial dispersion and mean equivalent Abbe number for the doublets.

3,694,058

MODIFIED TRIPLETS WITH REDUCED SECONDARY SPECTRUM

Wesley H. Vangraafeiland, 901 Elmgrove Road, Rochester, N.Y.

Filed Oct. 1, 1971, Ser. No. 185,602
Int. Cl. G02b 9/26
U.S. Cl. 350—227 **8 Claims**



A printer lens consists of a middle negative biconcave com-

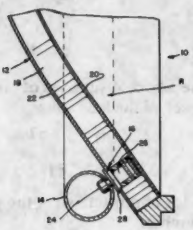
ponent surrounded by two positive doublets, with the lens parameters being selected to reduce secondary spectrum.

3,694,059

LIGHTWEIGHT COMPOSITE REFLECTOR DISH

William B. J. Shakespeare, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Sept. 30, 1970, Ser. No. 76,741
Int. Cl. G02b 7/18
U.S. Cl. 350—310 2 Claims



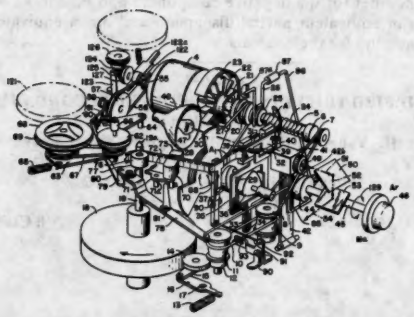
A lightweight precision dish structure for reflectors, particularly large parabolic microwave reflectors for space applications. The dish structure has a laminated reflector dish with a central core and bonded facing sheets of differing coefficients of thermal expansion, and a rigid reinforcing ring secured by adjustable fastening means to the rear convex side of the reflector dish and having a coefficient of thermal expansion closely approximating the resultant coefficient of the dish. The reinforcing ring and its adjustable fastening means permit initial adjustment of the dish to a precise parabolic or other configuration and prevent later thermal distortion of the dish as a consequence of the differing coefficients of its core and facing sheets in an adverse, asymmetric thermal environment.

3,694,060

MOTION-PICTURES PROJECTION DEVICE

Andre Francis Tadie, 19, rue Galilee, 75 Paris (16 eme), France

Filed March 24, 1970, Ser. No. 24,050
Claims priority, application France, March 27, 1969, 6909121
Int. Cl. G03b 31/02, 1/48
U.S. Cl. 352—14 10 Claims



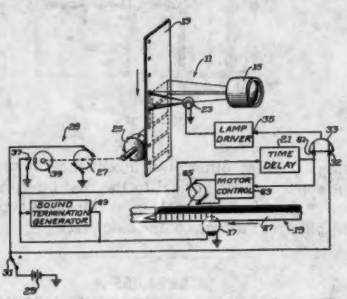
Simplification of handling operations necessary for motion-picture projection and especially that of sound films. The film with its reels is carried in a magazine positioned flat-wise on the projector. This positioning operation engages the film in the clawed channel and in the sound-track reproduction device. A constant length of loop between the projection gate and the sound-head is ensured by regulating the film's unwinding motion obtained by means of a follower controlling the level of the belt interconnecting a set of opposite truncated pulleys inset in the transmission of the rotating motion to a friction type supply-roller of film.

3,694,061

AUDIO-VISUAL APPARATUS

Robert S. John, Jr., Deerfield, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed April 16, 1971, Ser. No. 134,774
Int. Cl. G03b 31/04
U.S. Cl. 352—20 6 Claims



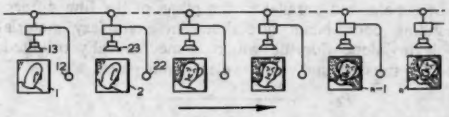
An apparatus for synchronizing an audio presentation with a visual display. During camera operation, the sprocket side of the film is exposed by a lamp which is energized upon actuation of the camera. After a predetermined amount of the film has been exposed, the lamp is extinguished and a tape recorder is started. During playback, the commencement of an opaque area along the sprocket margin of the film is sensed and utilized to actuate the recorder providing a synchronized sound accompaniment with the visual presentation.

3,694,062

STROBOSCOPIC DISPLAY

Wolf M. Koenig, Montreal, Quebec, Canada, assignor to Roman Kroitor, Montreal, Quebec and A. Bram Appl., Westmont, Quebec, Canada

Filed Oct. 30, 1969, Ser. No. 872,636
Claims priority, application Canada, March 31, 1969, 47,335
Int. Cl. G03b 25/00
U.S. Cl. 352—100 1 Claim



There is provided an advertising system for use in railway tunnels and elevator shafts, etc., whereby a succession of pictures having incremental differences are fixed to a wall outside the passenger vehicles. The movement of the vehicle gives to the pictures an animated appearance to a viewer within the vehicle. The system is substantially operable at any vehicle speed above a certain minimum and is not dependent on the spacing of windows in the vehicle.

3,694,063

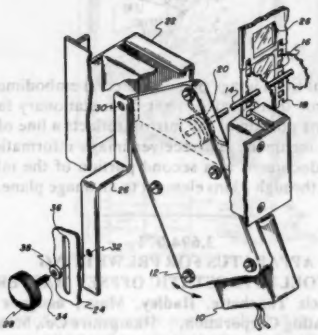
Patent Not Issued For This Number

3,694,064

FRAMING ADJUSTER FOR SINGLE FRAME FILMSTRIP PROJECTOR

William R. Hirth, Warminster, Pa., assignor to Optisonics Corporation, Montgomeryville, Pa.

Filed Aug. 23, 1971, Ser. No. 173,949
Int. Cl. G03b 21/46
U.S. Cl. 352—163 3 Claims



An indexing or framing adjuster for a shuttlerless projector of the type which projects the frames of filmstrip sequentially and non-continuously onto a viewing screen, usually in synchronism with an audio presentation. The filmstrip is advanced by means of a motor mechanism which rotates a pair of sprocket wheels in engagement with the filmstrip a fixed angular increment each time the mechanism is actuated. The entire motor mechanism is pivotably mounted on an axis coincident with the mechanism's output shaft (the shaft which drives the sprocket wheels) such that rotation of the motor mechanism adjusts the position of the filmstrip. This enables the projected frame thereof to be symmetrically positioned (centered) on the viewing screen, whereby subsequently projected frames also will be properly centered. Rotation of the mechanism is accomplished by linearly adjusting a knob on the outside of the projector. The shaft of the knob extends through an elongated aperture in the housing of the projector into threaded engagement with one end of an arm, and other end of which is pivotably connected to the motor mechanism at a point spaced from its axis of rotation.

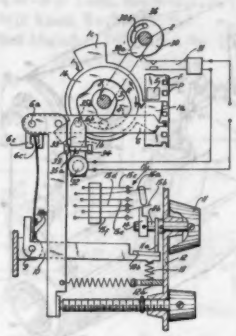
3,694,065

TRANSPORTING MECHANISM FOR MOTION PICTURE FILM

Johann Roth, Schwabhausen, Germany, assignor to Niezoldi & Kramer GmbH, Munich-Allach, Germany

Continuation-in-part of Ser. No. 872,087, Oct. 29, 1969, Pat. No. 3,583,801. This application Nov. 2, 1970, Ser. No. 86,171
Claims priority, application Germany, Nov. 6, 1969, P 19 55 756.3
Int. Cl. G03b 1/22
U.S. Cl. 352—195 17 Claims

Transporting mechanism for film in motion picture projectors wherein the in-out cam is replaced with an electromagnet which is energized and deenergized in synchronism with the operation of that one of two transporting cams which move the shuttle lengthwise of the film, whereby the armature of the electromagnet causes the claw of the shuttle to enter into or to move out of the adjacent perforation. One of the transporting cams is operative when the film is transported forwardly, and



the other cam moves the shuttle when the film is to move rearwardly.

3,694,066

Patent Not Issued For This Number

3,694,067

PRODUCTION AND REPRODUCTION SYSTEMS WITH ENDLESS FILM OR TAPE CARTRIDGE

Carl J. Clement, Palo Alto, Calif., assignor to The Woodson Enterprises, Inc. c/o Becker and Savin, Chicago, Ill.

Filed Oct. 27, 1969, Ser. No. 869,772
Int. Cl. G03b 21/28, 23/17
U.S. Cl. 353—78 2 Claims

A camera, projector, viewer, sound recording or reproducing system using a continuous film or tape cartridge permitting such systems to be made with as few as one or two moving parts and which can be made by simple molding or die casting techniques. In an optical system, the film cartridge comprises a rotor and a stator which includes the means for driving the film and prism in synchronism. In a viewer, light is projected externally from a source within the viewer, through the film, an aperture in a centrally disposed interior surface of the stator and back into the viewer proper to a frosted screen for viewing. The cartridge permits manual or motor driven motion of the film in either a forward or a reverse direction and the central location of the aperture permits cartridges of relatively unlimited film capacity.

3,694,068

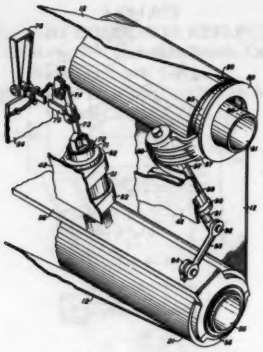
ROLLER RETRACTION MECHANISM IN A MULTIPLE ROLLER BELT ASSEMBLY

William E. Jordan, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 29, 1970, Ser. No. 102,463
Int. Cl. G03g 15/00; B65g 15/00
U.S. Cl. 355—3 4 Claims

A roller retraction mechanism for a belt assembly module of the type employing an endless photoconductive belt around a plurality of rollers. One of the rollers is mounted for rotation

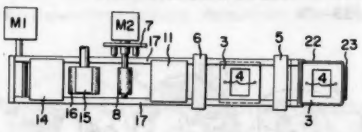
in a yoke which is pivotally mounted on an axis normal to its axis of rotation, and a toggle leakage arrangement is connected to the yoke for relatively moving the yoke axially along said pivotal axis.



3,694,069
COPYING APPARATUS

Keizo Yamaji, and Akira Kurahashi, both of Tokyo, Japan, assignors to Canon Kabushike Kaisha, Tokyo, Japan

Filed March 12, 1970, Ser. No. 18,850
Claims priority, application Japan, March 15, 1969, 44/23318; March 15, 1969, 44/23320; March 15, 1969, 44/48231; March 15, 1969, 44/48232
Int. Cl. G03g *15/00*
U.S. Cl. 355—4 **16 Claims**



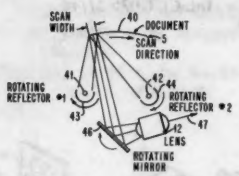
An electrophotographic copying apparatus for making a slide or microfilm record of an original image on a photosensitive member defined by a flexible photoconductive sheet and a relatively rigid frame supporting the photoconductive sheet. The copying apparatus includes a conveyor for supporting the relatively rigid frame of the photosensitive member and conveying same along a predetermined path. Charging, original image exposure and developing elements are disposed serially along the predetermined path in the direction in which the conveyor moves the photosensitive member and cooperate to form an electrophotographic image of the original image. A positioning arrangement, cooperable with the conveyor, is provided for selectively positioning the photosensitive member relative to the exposure element. A control arrangement for multicolor reproduction is also provided by which the conveyor is controlled to move the photosensitive member relative to the charging, exposure and developing elements a number of times corresponding to the number of color separation images utilized in the reproduction of said original image.

3,694,070
COPYING SYSTEM FEATURING SCANNING ILLUMINATION ELEMENTS

Edwin L. Libby, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 24, 1970, Ser. No. 66,326
Int. Cl. G03g *15/04*
U.S. Cl. 355—8 **2 Claims**

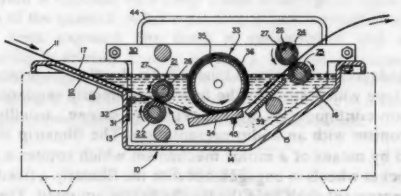
A copying system includes scanning illumination elements that focus the light only on the area of the original document that is actually being optically scanned by the system. A first embodiment has rotating reflectors cooperating with stationary lamp elements to project a line of light onto an original document and a rotating mirror receiving image information from the original document and transmitting the same through a lens element to an image plane. A second embodiment has a rotating mirror that receives light from stationary lamp elements in a first portion of the mirror, reflects a line of light to the original document and receives image information from the original document in a second portion of the mirror for transmission through a lens element to an image plane.



3,694,071
APPARATUS FOR PREWETTING PHOTOELECTROSTATIC OFFSET MASTERS

Albert Francis Touchette, Hadley, Mass., assignor to The Plastic Coating Corporation, Hampshire Co., Mass.

Filed Nov. 12, 1969, Ser. No. 875,835
Int. Cl. G03g *15/00*
U.S. Cl. 355—15 **17 Claims**



Apparatus for applying a prewetting solution to an image-bearing surface of a photoelectrostatic master sheet, which apparatus includes a scrubber roll rotatably disposed in pressure contact with the bearing surface of a guide plate which is submersed in a prewetting solution contained in a reservoir, and two spaced sets of rotatably mounted rolls arranged to advance a photoelectrostatic master sheet from an input position where the sheet is submersed, through the nip formed by the scrubber roll against the bearing surface where the image-bearing surface of the master sheet is lightly scrubbed to remove loose toner particles and to prepare it for reproduction, and to an exit position where excess prewetting solution is removed from the surface of the master sheet.

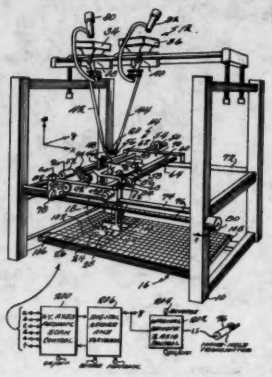
3,694,072
METHOD AND APPARATUS FOR MAKING ORTHOPHOTOS USING A FIXED FILM BED

Joseph O. Danko, Jr., Baltimore, Md., and Clinton J. T. Young, Alexandria, Va., assignors to Danko Arlington, Inc., Baltimore, Md.

Filed Aug. 25, 1971, Ser. No. 174,635
Int. Cl. G03b *27/32*
U.S. Cl. 355—22 **23 Claims**

Method and apparatus for making substantially orthographic photo images from an optically projected stereo model of three dimensional terrain without necessitating quick precision movements of a relatively massive high inertia and precision machined film bed. A flexible fiber optic bundle is used to transmit light images from a first end to a second end. The first end is scanned in three dimensions over and

upon the surfaces of the three dimensional stereo model while the second end is synchronously scanned in two dimensions over photo-sensitive material held in a relatively fixed and relatively cheaply constructed film bed. In a further embodiment, a first pseudo-scanning cycle may be performed to obtain corresponding three dimensional digital scanning data for



the first end of the fiber optic bundle which data are recorded and subsequently used to control a second automated real-scanning cycle where the film is actually exposed to either produce special effects such as color orthophotos or to merely permit more relaxed discontinuous operator control (including the ability to erase errors) during the first manually controlled pseudo-scanning cycle.

3,694,073

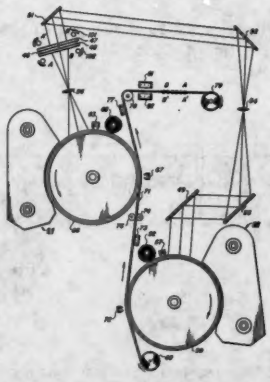
METHOD FOR DUPLEXING

Gopal C. Bhagat, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 751,986, Aug. 12, 1968, Pat. No. 3,580,670. This application July 20, 1970, Ser. No. 56,559

Int. Cl. G03b *15/00*

U.S. Cl. 355—24 **1 Claim**



A method for duplex printing by forming on the surface of a first plate an electrostatic latent image conforming to the information to be placed on the first side of a support material, then forming on the surface of a second plate an electrostatic latent image conforming to the information to be placed on the opposite side of the support material, developing the latent images, and transferring the developed image on each plate to its respective side of support material.

3,694,074

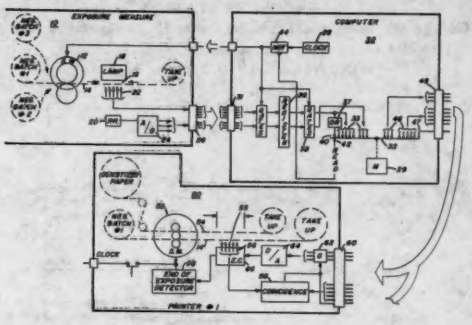
PHOTOGRAPHIC PRINTING SYSTEM

Robert W. Huboi, 1220 Woodhull Road, Webster, N.Y.; Terry E. Riley, 58 Cor-Mar Lane, Rochester, N.Y., and Bradley D. Rising, 311 Mill Road, Rochester, N.Y.

Filed March 5, 1970, Ser. No. 16,775

Int. Cl. G03b *27/78*

U.S. Cl. 355—38 **1 Claim**



Photographic printer apparatus is a building block arrangement of printer components. An exposure determining device, which produces printer control signals derived from photographic negatives, applies such signals to a computer; and a photographic printer draws such printer control signals from the computer independently of the operation of the exposure determining device. Such an arrangement permits a plurality of printers to cooperate with a common exposure determining device; and further permits photofinishers to avoid equipment redundancies.

3,694,075

Patent Not Issued For This Number

3,694,076

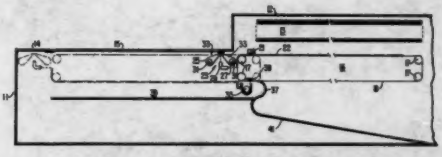
MULTIPLE LENSLET COPIER

Paul E. Weber, 921 Bartlet Terrace, Libertyville, Ill.

Filed Aug. 31, 1970, Ser. No. 68,212

Int. Cl. G03b *27/48*, *27/50*

U.S. Cl. 355—50 **46 Claims**



This disclosure describes a multiple lenslet copier wherein a plurality of pairs of lenslets are aligned along a common axis. Each pair of lenslets include a first and a second lenslet separated by an air space. The air space forms a field lens that images light rays from the outer surface of the first lenslet onto the outer surface of the second lenslet to reduce vignetting. An optical field stop is located in the air space between the lenslets to limit the size of the image projected by each pair of lenslets. In addition, a baffle is located along the optical axis of each pair of lenslets to prevent cross-talk. The pairs of lenslet are moved at right angles to their common axis across the surface of an original document so as to project an image onto a sheet of copy paper. The copy paper is either moved to a stationary position prior to movement of the pairs of lenslets or moved as the pairs of lenslets are moved. Alternatively, the

copy paper and the original document may move while the pairs of lenslets remain stationary.

3,694,077

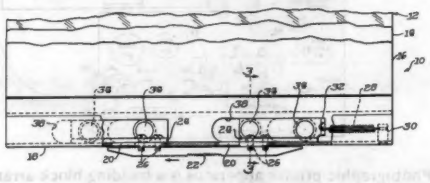
Patent Not Issued For This Number

3,694,078

QUICK RELEASE MAGNETIC LATCH FOR COPIER EXPOSURE STATION

George W. Bookless, Franklin Park, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Nov. 27, 1970, Ser. No. 93,211
Int. Cl. G03b 27/62
U.S. Cl. 355—75 3 Claims



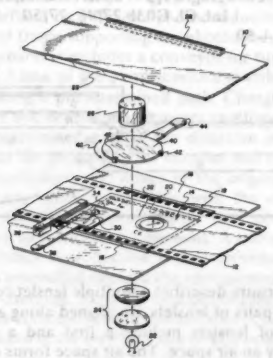
A latch for a copier exposure station including laterally slideable ferromagnetic members that coact with underlying stationary ferromagnetic members. The latch finds particular utility in a duel-blanket exposure station.

3,694,079

PHOTOGRAPHIC PRINTING APPARATUS AND METHOD FOR REPRODUCING AN ORIGINAL HAVING SEPARATE MAJOR AREAS OF RESPECTIVELY DIFFERENT DENSITIES

James Edward Harvey, 901 Elmgrove Road, Rochester, N.Y.

Filed Oct. 7, 1969, Ser. No. 864,419
Int. Cl. G03b 7/00
U.S. Cl. 355—77 9 Claims



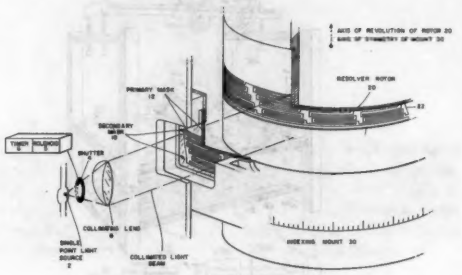
An apparatus and method for producing, by a single exposure a print of a film transparency having separate major areas of respectively different densities. The exposure of a lower density area is variably reduced or dodged with respect to an adjacent or surrounding high density area through the use of polarizer filters. The apparatus is particularly suited for printing identification card film negatives having a portrait area of low density and a data area of high density.

3,694,080

METHOD OF AND APPARATUS FOR PHOTOPRINTING CONDUCTOR PATTERNS ON THE CURVED SURFACES OF TRANSDUCERS

Herbert Maisky, Belmont, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed March 9, 1970, Ser. No. 17,691
Int. Cl. G03b 27/00
U.S. Cl. 355—86 7 Claims



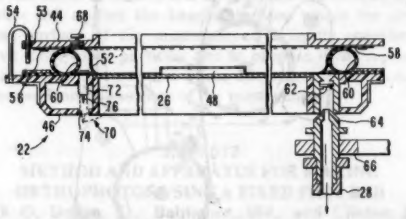
Method of and apparatus for positioning and photoprinting with high accuracy a magnetic or electrically conducting pattern of repeatable units on the curved surfaces of revolution of a transducer. The curved surface is placed on an indexing mount, and a mask of one unit of the pattern and conforming to the curved surface is located as close as possible to, but not in contact with the curved surface. Light is directed through the mask, projecting the image of the unit on the photoresist-coated surface. The surface is then rotated relative to the mask through an angular displacement corresponding to the desired distance between units of the pattern. The light again impinges through the mask, and another unit is exposed. The process is continued until a full revolution is achieved, and a complete pattern of repeatable units is formed. Where the mask is mounted on an indexing mount, the process is as aforementioned, except that the mask is rotated relative to the mount.

3,694,081

METHOD AND APPARATUS FOR CONTACT PRINTING

Charles H. Keller, Sunnyvale, Calif., assignor to Pek, Inc., Sunnyvale, Calif.

Filed Feb. 11, 1970, Ser. No. 10,348
Int. Cl. G03b 27/20, 27/2
U.S. Cl. 355—91 35 Claims



A contact printing system and a process for contact printing using independent transportable, vacuum-frame, workpiece-holding assemblies. The workpiece to be exposed is inserted within a transportable vacuum frame which is then evacuated of substantially all of the air therein. The transportable frame, which automatically maintains itself in the evacuated state is then manually and/or automatically transported to a radiation station where the workpiece is exposed to radiation such as light or ultraviolet radiation. After being exposed the vacuum frame may be manually or automatically removed from the ex-

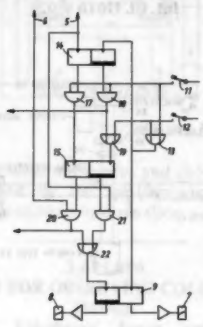
posure station for further processing. Desirably each vacuum frame includes two transparent plates one for each side of the vacuum frame so that both sides of the vacuum frame can be exposed simultaneously to the radiation.

3,694,082

PHOTOGRAPHIC PRINTER

Walter Knapp, and Kurt Ramsauer, both of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 28, 1970, Ser. No. 102,011
Claims priority, application Germany, Dec. 29, 1969, P 19 65 244.9
Int. Cl. G03b 27/04
U.S. Cl. 355—97 14 Claims



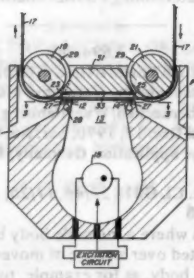
Printable negatives are provided with notches that are detected, the resulting "notch" signals being sent to a logic circuit that controls the movement of the film through the scanning and printing stations. A first "notch" signal from a scanning station stops the corresponding negative in the scanning station. The succeeding "notch" signal from a scanning station do not, the film being stopped by the "notch" signal from the printing station. If the negative has no notch, the omission of the "notch" signal from the scanning station prevents printing of the un-notched negative.

3,694,083

METHOD AND APPARATUS FOR EXPOSING A PORTION OF A PHOTOGRAPHIC STRIP

Neil S. White; David E. Wenschhof, and Richard R. Mosman, all of 1669 Lake Ave., Rochester, N.Y.

Filed April 26, 1971, Ser. No. 137,425
Int. Cl. G03b
U.S. Cl. 355—133 8 Claims



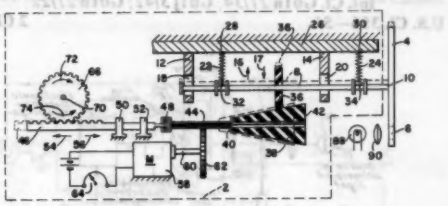
A method and apparatus are disclosed for controlling the exposure of a portion of a photographic film strip so that sharp lines of demarcation are formed between exposed and nonexposed areas of the strip. During exposure of a portion of the film strip, the film strip is forced to cooperate with the periphery of an exposure aperture to form a light-seal that substantially prevents light from leaking to areas of the strip adjacent to the portion being exposed. Air jets positioned at the periphery of the aperture are used to create a pressure differential across the strip which tends to draw the strip towards the periphery of the aperture to form the light-seal and also guide the web in a precise path over the aperture.

3,694,084

STROBOSCOPIC SPEED DISPLAY MEANS FOR MOVING VEHICLES

Joel P. Citron, 3252 Stanley Road, Akron, Ohio

Continuation-in-part of Ser. No. 606,495, Nov. 30, 1966, abandoned. This application March 23, 1970, Ser. No. 21,930
Int. Cl. G01p 3/40
U.S. Cl. 356—25 18 Claims



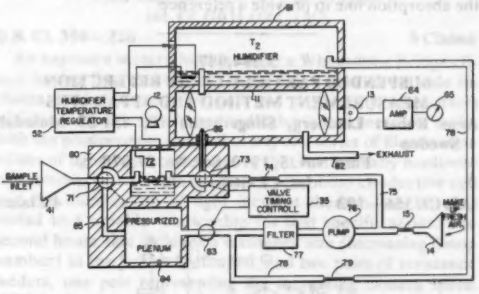
This invention relates generally to relative speed-indicating means and more particularly to a visual display system for enabling an abstract visual comparison of the relative speed of one moving vehicle with respect to another and further to means capable of presenting an abstract visual display to the operator of a moving vehicle of the required desirable vehicle speed, said latter presentation being dictated remotely from a fixed station situated externally of the moving vehicle or directly to the operator from means within the vehicle.

3,694,085

MIXING TYPE CONDENSATION NUCLEI METER

Theodore A. Rich, Scotia, N.Y., assignor to Environment/One Corporation, Schenectady, N.Y.

Filed Sept. 10, 1970, Ser. No. 71,060
Int. Cl. G01n 1/10, 21/26
U.S. Cl. 356—37 17 Claims



A condensation nuclei meter for deriving a count of the condensation nuclei particles entrained in a sample atmosphere. The meter comprises a condensation chamber having a light source and photocell disposed at opposite ends for projecting a light beam through the condensation chamber and deriving an output electric signal from the photocell which is representative of the light modifying effects on the light beam of liquid droplets formed in the condensation chamber. A first filtered gas at a first temperature value and 100 percent relative humidity is introduced in the condensa-

tion chamber with the condensation chamber maintained at the first temperature value. A second condensation nuclei particle bearing sample gas to be monitored is then introduced at a second temperature value different from the first temperature and at 100 percent relative humidity at the second temperature. The second gas is rapidly injected and turbulantly intermixed with the first gas within the condensation chamber in a manner to assure rapid mixing at the confluence of the two gases whereby supersaturation occurs and condensation takes place about the condensation nuclei particles as centers of condensation.

3,694,086

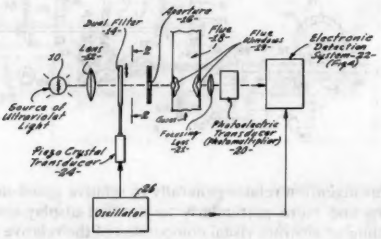
CORRELATION SPECTROMETER

Donald L. May, Manhattan Beach, Calif., assignor to Centron Engineering, Inc., Gardena, Calif.

Filed April 12, 1971, Ser. No. 133,192

Int. Cl. G01n 21/34; G01j 3/42; G01n 21/22

U.S. Cl. 356—51 **2 Claims**



An improved correlation spectrometer is provided which may be used for the quantitative measurement of the amounts of such gases as SO_2, CO_2, NO, NO_2, and N_2O_3, in a gaseous discharge. The invention has particular utility, for example, in the measurement of sulphur dioxide (SO_2) in a flue discharge so that the sulphur dioxide level may at all times be maintained below acceptable ecological thresholds. The correlation spectrometer of the invention includes a piezoelectric transducer which effectively causes filters to be selectively and cyclically introduced into the optical path between an ultravoilet light source and a photoelectric transducer, so that the percent transmittance may be measured successively and repeatedly at two distinct wavelengths. The two wavelengths respectively correspond to an oabsorption line of the particular gas being measured, and to a wavelength displaced from the absorption line to provide a reference.

3,694,087

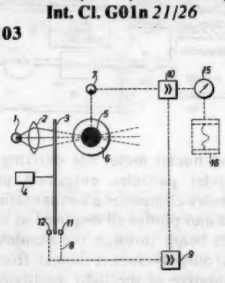
SUSPENDED PARTICLE LIGHT REFLECTION MEASUREMENT METHOD AND APPARATUS

Arne Robert Lindberg, Slingergatan 18, 431-39 Molndal, Sweden

Filed Nov. 5, 1970, Ser. No. 87,078

Int. Cl. G01n 21/26

U.S. Cl. 356—103 **4 Claims**



An apparatus and method for measuring the content of material suspended in liquids or the turbidity of liquids by illuminating the liquid with a light source and a photo-electrical registration of the intensity of the reflected light comprising a tubular nozzle arranged to provide a jet of liquid. Said jet of liquid being illuminated through a gap substantially perpendicularly to said jet, whereupon the intensity of the light reflected from particles in said jet is measured at an angle to that at which the light falls.

3,694,088

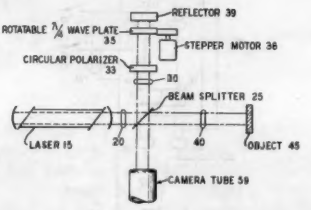
WAVEFRONT MEASUREMENT

John Everett Gallagher, Scotch Plains, and Donald Richard Herriott, Morris Twp., Morris Cty., both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 25, 1971, Ser. No. 109,220

Int. Cl. G01b 9/02

U.S. Cl. 356—106 **17 Claims**



A conventional interferometer has been modified so that amplitude and phase information contained in an interference pattern may be calculated from intensities read out by a television camera and phase shifts introduced by rotation of a quarter-wave plate. To operate the device, reference light at a first phase is interfered on the television camera with light from the object being tested. Such an object might be a lens. The camera samples the intensity of the interference pattern at an array of points; and these values of intensity are stored in a computer. Next, a known phase shift is introduced into the reference beam by rotating the quarter-wave plate; and the intensity in the resulting interference fringe pattern is again sampled at the same points in the array and stored. This process is again repeated for a second known phase shift. Because the three values of intensity obtained at each point in the array are interrelated by the fact that the intensity at any point in the interferogram is a cosinusoidal function of phase, simultaneous solution at each point of three equations corresponding to the three values of intensity produces phase and amplitude plots of the wavefront from the object under study. Alternatively, by making several measurements of the intensity over phase angles from zero to 2π, it is possible to form phase and amplitude plots by determining Fourier coefficients.

3,694,089

DEVICE FOR DETERMINING GUIDANCE ERRORS

Kurt Rantsch, Heidenheim, Germany, assignor to Carl Zeiss-Stiftung, Oberkochen/Wuerttenberg, Germany

Filed Dec. 17, 1970, Ser. No. 99,220

Claims priority, application Germany, Dec. 23, 1969, P 19 64 470.3

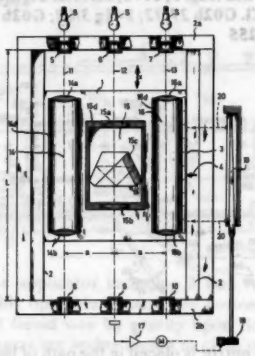
Int. Cl. G01b 21/46, 11/26, 11/26

U.S. Cl. 356—138 **18 Claims**

In applications where a movable body is to be precisely displaced and oriented over a range of movement with respect to a relatively fixed body, as for example, to maintain the movable body on a precise axial alignment (free of tilt and lateral offsets) over a range of axial displacement of the movable body, the invention contemplates a combination of optical systems, particularly afocal systems having imaging characteristics $\beta' = +1$ and $\beta' = -1$. These afocal systems include component elements so disposed on the moving and fixed

bodies that wide-based fixed optical reference axes may be continuously observed and tracked.

The invention is described in the illustrative context (a) of a



single-axis guided slide movement and (b) of a multiple-axis system, exemplified by the two-component motion of a machine-tool cross-slide on its main slide.

3,694,090

INSTRUMENT FOR OBSERVING COLORED BUBBLE IMAGE

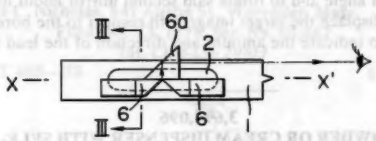
Hideki Ohyama, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 6, 1970, Ser. No. 78,399

Claims priority, application Japan, Oct. 6, 1969, 44/94587

Int. Cl. G01c *9/24*

U.S. Cl. 356—148 **1 Claim**



A coincidence type bubble image observation instrument including a coincidence prism, a bubble tube and a reflecting plate for confirming the coincidence of the bubble image. A color filter of a colored reflecting plate is placed on one side of the split line in opposed relation with a coincidence prism between a reflecting plate and a bubble tube to coloring only the bubble image.

3,694,091

OPTICAL DEVICE FOR ALIGNING OBJECTS LOCATED AT AN ARBITRARY DISTANCE THEREFROM

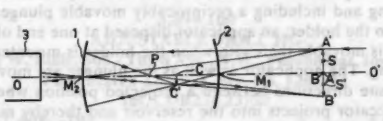
Hendrik de Lang, Klein Vrijenban 1, Delft, Netherlands

Continuation of Ser. No. 780,926, Oct. 22, 1968, abandoned. This application July 19, 1971, Ser. No. 164,096

Claims priority, application Netherlands, Oct. 25, 1967, 6714459

Int. Cl. G01b *11/26*

U.S. Cl. 356—172 **6 Claims**



An alignment device employing two substantially identical aligned concave partially reflective mirrors where the center of curvature of each mirror is contained by the other mirror.

The device will form an inverted image of any object placed substantially along a line formed by the centers of curvature of the two mirrors. Any part of the object lying exactly in alignment with the line formed by the centers of curvature will be overlapped by a corresponding part of the image.

3,694,092

PHOTOMETER

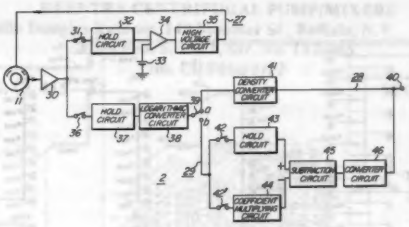
Hiroshi Hashimoto, Naka-gun; Takehide Satou, Katsuta; Kengo Sudo, Katsuta, and Naoya Ono, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed March 3, 1970, Ser. No. 16,052

Claims priority, application Japan, March 7, 1969, 44/16860

Int. Cl. G01j *3/48, 3/46*

U.S. Cl. 356—188 **8 Claims**



A photometer which is used to test a sample by the use of two different wavelengths λ_1 and λ_2, multiplying the test result of the sample for the wavelengths λ_2 by a certain coefficient, and subtracting the value obtained by the said multiplication from the test result of the sample for the wavelength λ_1, thereby quantitatively analyzing the sample.

3,694,093

EXPOSURE METER

Charles A. Jantzen, 190 Alps Road, Wayne, N.J., and Victor J. Canziani, 1145 E. 21 St., Brooklyn, N.Y.

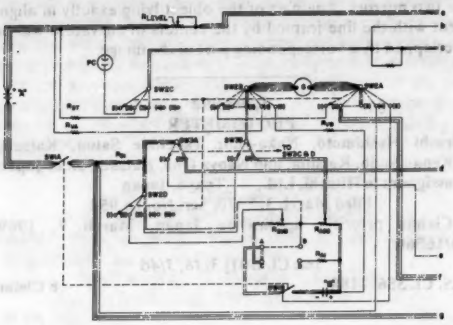
Filed Aug. 30, 1971, Ser. No. 175,838

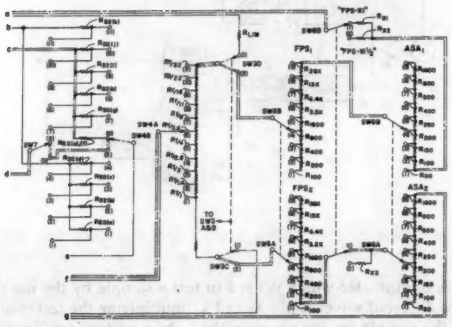
Int. Cl. G01j *1/44, 1/42*

U.S. Cl. 356—226 **8 Claims**

An exposure meter which includes a Wheatstone Bridge circuit having first and second house sides. One house side includes a photoconductive cell and a plurality of resistors which can be selectively and individually connected in series with the photoconductive cell at any of a series of illumination values of light incident thereon so that the normally nonlinear relationship between the resistance of a photo conductive cell and the illumination of light incident thereon can be converted to a useable relationship for that specific series. The second house side includes a resistance size (increasing *f*/stop number) as the ladder is climbed, and two pairs of resistance ladders, one pair representing the increasing camera speed (FPS or frames per second) as the ladders are climbed and one pair representing the increasing film sensitivity (ASA rating) as the ladders are climbed. The individual ladders of each pair are identical, have a preselected number of steps and are conjointly set to the same setting or position so that when one ladder of each pair is interconnected and each so connected pair is respectively connected to the top or bottom of the first resistance ladder a constant total resistance will be maintained, for all possible settings, on the second house side. The Bridge can be standardized so that the photoconductive cell can be calibrated and compensated for any deviation from a standard set of resistance values for the specific illumination

series. Also provided is means for multiplying each of the camera speed (FPS) setting by a predetermined multiple so





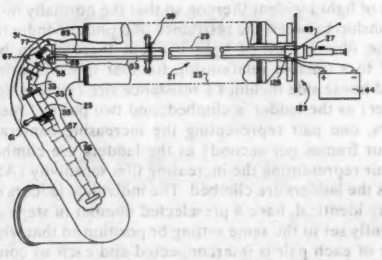
that a wide range of FPS settings can be conveniently provided.

3,694,094

BORESCOPE WITH VARIABLE ANGLE SCOPE

George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Drury K. Mitchell, 3543 Chowning Court, Columbus, Ohio

Filed Dec. 22, 1970, Ser. No. 100,639
Int. Cl. G01n 21/16; G02b 7/22
U.S. Cl. 356—241 **6 Claims**



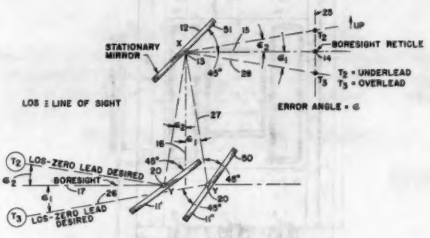
A borescope with an adjustable hinged telescoping optical system which will permit visual inspection of bore surfaces at angles greater than 90°.

3,694,095

FIRE CONTROL SYSTEM

John D. Louthan, Dallas, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed Aug. 5, 1970, Ser. No. 61,133
Int. Cl. G02b 27/32; F41g 3/08; G02b 5/08
U.S. Cl. 356—255 **4 Claims**



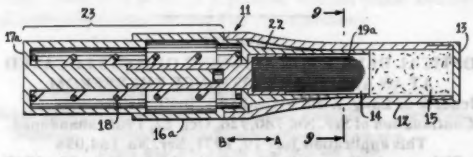
A first, fixed mirror is placed in the path of light passing to a boresight reticle and inclined at an angle to the boresight axis. A second mirror is positioned transversely to said boresight axis and reflects the image of a target to the first mirror and thence along the boresight axis to the boresight reticle. The second mirror is rotatable about two axes, the first axis lying in the plane of the first mirror and intersecting said boresight axis at a right angle, and the second axis lying in the plane of the second mirror and parallel to the first axis. Computing means are provided to determine the desired (correct) lead angle, the actual lead angle and the lead angle error between the intercepting aircraft and the target, and to produce signals indicative of the error. Means are provided for receiving the error signals and for responding thereto to rotate said second mirror about its second axis to center the target image on the boresight reticle when the actual lead angle is equal to the correct lead angle and to rotate said second mirror about its first axis to displace the target image with respect to the boresight reticle to indicate the amount and direction of the lead angle error.

3,694,096

POWDER OR CREAM DISPENSER WITH SELF-CONTAINED APPLICATOR

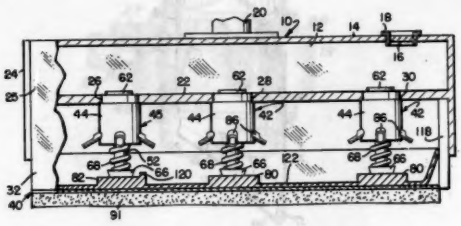
David Seidler, Forest Hills, N.Y., assignor to Menley & James Laboratories, Philadelphia, Pa.

Filed Sept. 23, 1970, Ser. No. 74,596
Int. Cl. A45d 33/00
U.S. Cl. 401—127 **4 Claims**



A powder or cream dispenser with a self-contained applicator is comprised of a casing having a reservoir adapted to receive a dispensable material, a holder movably mounted on the casing and including a reciprocably movable plunger attached to the holder; an applicator disposed at one end of the plunger is movable therewith when the holder is mounted on the casing. The applicator as well as the plunger are movable in opposite directions between a projected position wherein the applicator projects into the reservoir and thereby makes contact with the dispensable material and, respectively, a retracted position in which the applicator is clear of the reservoir.

3,694,097
LIQUID WAX APPLICATOR
John M. Fedorek, 1034 Surrey Road, Summerdale, N.J.
Filed March 22, 1971, Ser. No. 126,660
Int. Cl. A47l *13/312*
U.S. Cl. 401—206 10 Claims



A liquid wax applicator including a wax reservoir and a plunger assembly operable through the bottom of the reservoir to deposit liquid wax by gravity upon floor contacting pads. The plungers are spring biased to close openings in the reservoir bottom to prevent escape of liquid wax from the reservoir. Pressure may be applied upon the plungers by pressing upon the applicator handle to depress the plunger springs and urge the applicator pads against the plungers to allow wax to flow from the reservoir onto the applicator pads during the time pressure is applied. Each plunger incorporates a plurality of nozzles which are so positioned as to assure even distribution of the wax across the entire applicator pad area.

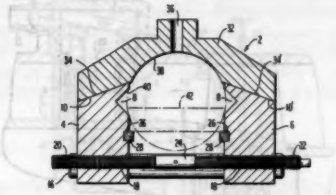
3,694,098
Patent Not Issued For This Number

3,694,099
BORING TOOL
George C. Nicholas, 141 Austin St., Worcester, Mass.
Filed Oct. 23, 1970, Ser. No. 83,462
Int. Cl. B23b *29/03*
U.S. Cl. 408—58 6 Claims

In general, this invention relates to a tool for forming bores in material, wherein the tool has a shaft, a cutting element mounted on one end of the shaft, and a suction passage in the shaft to remove chips.

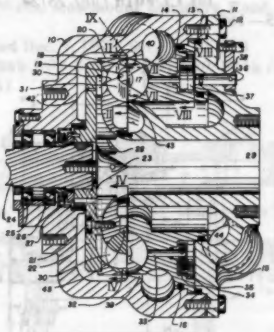
3,694,100
ADJUSTABLE DRILL JIG
Lesley W. Blair, 605 - Third Ave., N.W., Pocahontas, Iowa
Filed March 22, 1971, Ser. No. 126,592
Int. Cl. B27g *23/00*
U.S. Cl. 408—105 5 Claims

A drill jig has spaced opposed jaws defining a space within which a round workpiece is clamped. The upper surfaces of the jaws slope along planes which converge at a line running midway above the space occupied by the workpiece. A saddle



having sloped bottom surfaces complementary with the upper surfaces of the jaws rests on the jaw tops. At the center of the saddle is a guide hole for a center punch.

3,694,101
REENTRY CENTRIFUGAL PUMP/MIXERS
Rollin Douglas Rumsey, 148 Summer St., Buffalo, N.Y.
Filed Feb. 5, 1971, Ser. No. 112,865
Int. Cl. F01d *1/12*
U.S. Cl. 415—52 12 Claims

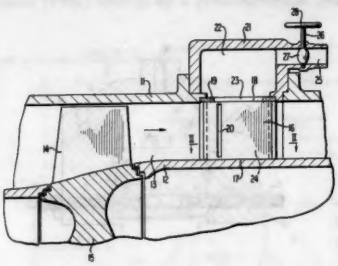


A reentry centrifugal pump has within its housing a toroidal working chamber one-half of which is stationary and the other half of which is blade filled and contained in a rotor coupled to a shaft. Fluid inlet to the working chamber is along the inside periphery on one version and from the blades at the centerline of the toroid (the fluid vortex center) on another or both. When more than one inlet is employed, extremely efficient mixing of the fluids results. Provision is made to prerotate the inlet fluid using a conventional centrifugal pump runner in order to avoid inlet shock. Fluid outlet from the working chamber is provided along the outside periphery to a diffusor on one embodiment and through the stationary casing adjacent to an abutment dam blocking the stationary housing portion of the toroidal working chamber on another.

3,694,102
GUIDE BLADES OF AXIAL COMPRESSORS
Oswald Conrad, Schmiden, Wurttemberg, Germany, assignor to Daimber-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed July 7, 1970, Ser. No. 52,832
Claims priority, application Germany, July 26, 1969, P 19 38 132.9
Int. Cl. F01d *5/14*
U.S. Cl. 415—115 21 Claims

A guide blade arrangement of axial compressors in which the guide blades are provided with openings for sucking off

the boundary layer, which are in communication by way of



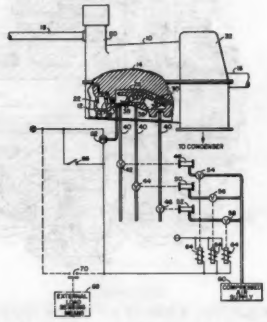
hollow spaces provided in the blades with a space of relatively low pressure.

3,694,103

PROTECTIVE SYSTEM FOR AUTOMATIC ACTUATION OF STEAM TURBINE DRAIN VALVES

Albert Cohen, and Frank O. Burckhalter, both of Wallingford, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 9, 1971, Ser. No. 114,000
Int. Cl. F01d *1/00, 25/24*
U.S. Cl. 415—168 **6 Claims**



System for automatically opening drain valves to drain condensate from a steam turbine when the load on the turbine falls below a predetermined limit beyond which condensate within the turbine casing is likely to occur. Preferably, load conditions are sensed by a pressure switch actuable in response to a low pressure-low load condition within the turbine casing. This switch then closes electrical circuitry for opening the drain valves when the pressure falls below the aforesaid predetermined limit.

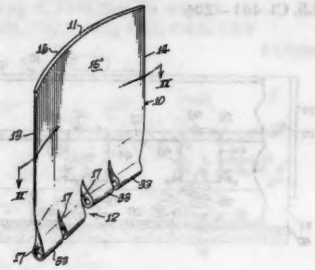
3,694,104

TURBOMACHINERY BLADE

John R. Erwin, Paradise Valley, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Oct. 7, 1970, Ser. No. 78,714
Int. Cl. F01d *5/14*
U.S. Cl. 416—217 **18 Claims**

This turbomachinery blade has an internal frame or strut made of plastic-impregnated fibers and covered with a thin metal sheath. The frame has sections extending spanwise with the fiber rovings wound under tension which is maintained while the plastic is being cured. The sheath may be made in one or more sections to receive the assembled frame structure the parts being adhesively or otherwise joined into a unit. The frame sections have the fibers passed around mandrels to form loop type openings at the hub end for receiving pins by which the blades are retained in the hub or on a rotor disc. When the blades are assembled with a disc to form a rotor, suitable



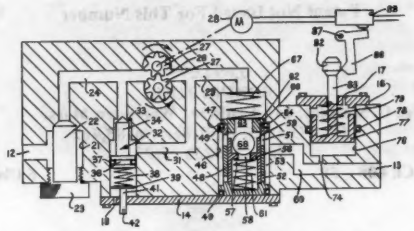
spacers are inserted between them to provide the platforms or inner boundaries for the air or gas passages.

3,694,105

FLUID PRESSURE SYSTEM

Thomas B. Martin, Micro-Pump Corp., 1021 Shary Court, Concord, Calif.

Filed Oct. 2, 1970, Ser. No. 77,527
Int. Cl. F04b *49/00, 49/08*
U.S. Cl. 417—26 **8 Claims**



A system of valves used in conjunction with a constant-speed pump provides a rate-of-flow-pressure relationship which commences with a high pressure at about zero flow, drops off rapidly to a point of very low flow, then flattens to an approximately straight line, gradually declining pressure to about maximum flow, then drops rapidly to zero pressure at maximum flow. The system includes co-axial, closely spaced and related check valve, pressure relief valve and control valves. The system also includes an adjustable pump by-pass valve and a discharge valve which inactivates the pump motor when discharge pressure exceeds a maximum or falls below a minimum.

3,694,106

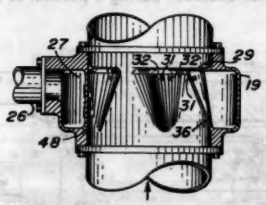
AIR-LIFT PUMP WITH SCALLOPED AIR-LIBERATION RINGS, AT TWO LEVELS

James Donald Walker, Aurora, Ill., assignor to Chicago Bridge & Iron Company

Filed June 8, 1970, Ser. No. 44,234
Int. Cl. F04f *1/18*
U.S. Cl. 417—109 **2 Claims**

Efficiency for a large diameter air-lift pump is achieved with a scalloped air liberation ring, inwardly projecting portions having orifices to liberate air with good distribution through the liquid flow area. The under sides of the projections slope steeply toward the tips and are gently rounded to avoid catching elongated strands. Liberation of air at near the lowest

level possible, for efficiency, is achieved by first liberating air at a higher level until flow causes dropped liquid head pressure, permitting the same air pressure to be used for the deeper liberation.



3,694,107

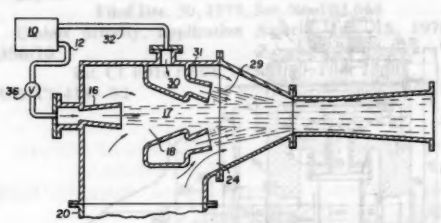
EJECTOR APPARATUS AND METHOD OF UTILIZING SAME

Robert Stein, Rego Park, N.Y., assignor to Nash Engineering Company, South Norwalk, Conn.

Continuation-in-part of Ser. No. 44,962, June 10, 1970, abandoned. This application Nov. 19, 1970, Ser. No. 90,975

Int. Cl. F04f *5/22, 5/46*

U.S. Cl. 417—167 **3 Claims**



A compound ejector apparatus comprising a primary nozzle, primary mixing chamber, secondary nozzle, secondary mixing chamber and diffuser, the primary nozzle functioning mainly as a super charger and the secondary nozzle functioning mainly as a mixer and which furnishes a major portion of the kinetic energy for the compression work taking place in the diffuser, each nozzle being supplied with a part of the motive fluid, wherein the motive fluid supplied to the secondary nozzle has a higher pressure than that supplied to the primary nozzle and wherein the amount of motive fluid supplied to the primary nozzle is only a small part of the total motive fluid supplied to the apparatus.

3,694,108

HYDRAULIC APPARATUS FOR REGULATING THE FLOW OF ONE OR MORE PUMPS

Carlo Pensa, Via S. Carlo, Esino Lario (Como), Italy

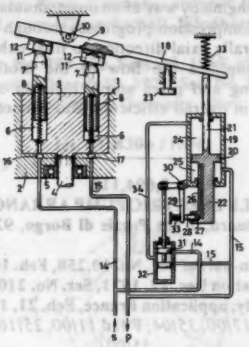
Filed April 14, 1970, Ser. No. 28,425

Claims priority, application Italy, April 23, 1969, 15873 A/69

Int. Cl. F04b *1/26, 23/04, 41/00*

U.S. Cl. 417—222 **12 Claims**

In combination with a pump having a variable rate of flow, a device for varying such rate of flow is governed by the pressure generated by the pumps through a variable transmission mechanism the ratio of which depends on the said rate of flow, whereby the power output of the pump can be maintained at a predeterminate value. The device can be used with two pumps



for limiting the total power output of both pumps, as being governed by the average of the two pressures.

3,694,109

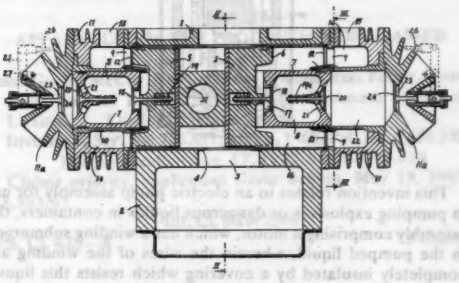
INTERNAL COMBUSTION ENGINE OR COMPRESSOR

Patrick Joseph Walls, Rosemount Glandore Road, Dublin 9, Ireland

Filed Dec. 9, 1970, Ser. No. 96,330

Int. Cl. F04b *3/00, 5/00, 25/00, 7/00;* **F01b** *1/00*

U.S. Cl. 417—261 **8 Claims**



The invention concerns a double acting engine which may be either an internal combustion engine or a compressor, the construction being characterized by the combination of a main cylinder, a double-acting type piston reciprocatably mounted therein, a cylinder head detachably mounted on each end of the main cylinder and carrying a cylindrical sleeve of smaller diameter than the main cylinder and extending coaxially towards the main cylinder, a hollow portion of reduced diameter extending coaxially from each end of the main piston to slidably fit within said cylindrical sleeve extending towards it, valve means to control the admission of air to the annular main cylinder space surrounding said hollow reduced portion, inlet valve means mounted on said piston to control the admission of air from said annular cylinder space into said hollow portion of the piston, outlet valve means mounted on said piston to control the transfer of air from said hollow piston portion into the interior of said sleeve, and exhaust valve means in the cylinder head to control the discharge of exhaust gas from said sleeve. The construction may also incorporate an auxiliary piston slidable in each of the aforesaid sleeves, the movements of the auxiliary pistons being constrained so that for the major part of their travel they move in opposition to the main piston. The latter is operatively connected directly to a crank shaft without the intermediary of a connecting rod and the movements of the auxiliary pistons are co-ordinated from the crankshaft through the intermediary of

suitable connecting links, the arrangement permitting fine adjustment. The construction and arrangement of the valves is such that, when used as an internal combustion engine, air passes into the engine by way of an outer annular air chest and after its initial compression progresses through the engine interior in a generally axial direction to final exhaust. This not only greatly simplifies the flow of the motive fluids but facilitates cooling and gives ample cylinder strength at all parts, resulting in overall efficiency and economy in production.

3,694,110

IMMERSIBLE ELECTRIC PUMP ARRANGEMENTS

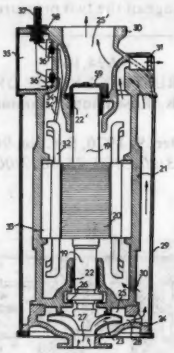
Paul Andre Guinard, 7 rue Pozzie di Borgo, 92 Saint Cloud, France

Continuation-in-part of Ser. No. 10,258, Feb. 10, 1972. This application Dec. 22, 1971, Ser. No. 210,740

Claims priority, application France, Feb. 21, 1969, 6904413

Int. Cl. F04b *17/00, 35/04;* **F01d** *11/00, 25/16;* **F16c** *7/00, 35/00*

U.S. Cl. 417—424 **3 Claims**



This invention relates to an electric pump assembly for use in pumping explosives or dangerous liquids in containers, the assembly comprising a motor, which has a winding submerged in the pumped liquid, wherein the wires of the winding are completely insulated by a covering which resists this liquid, and are extended without a break, at their two ends and guided through sealing means to a junction box, outside the container, in which the electric pump arrangement is suspended in known manner and in a way in which a complete seal is obtained. The preceding characteristic enables the electric pump-motor to be perfectly sealed against the exterior, so that it is possible to circulate the liquid under pressure in the interior of this motor without difficulty, so as to ensure, on the one hand, cooling of the motor and, on the other, feeding of the hydrostatic bearings and a stop for the shaft of the rotor of the electric pump.

3,694,111

FREE PISTON ENGINE BOUNCE COMPRESSOR

Anton Braun, 6421 Warren Ave., Minneapolis, Minn.

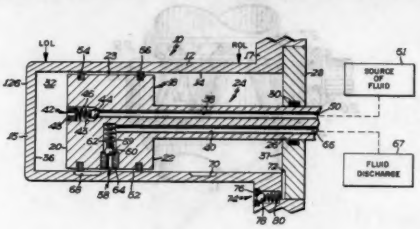
Filed March 4, 1970, Ser. No. 16,377

Int. Cl. F02b *71/00;* **F04b** *7/04, 21/94*

U.S. Cl. 417—491 **18 Claims**

An improved free piston engine is disclosed with an improved bounce compressor which includes a bounce compressor cylinder and a bounce compressor piston reciprocally movable with respect to each other. The engine includes venting means for the bounce compressor cylinder which provides a limited high velocity ejection of fluid from such cylinder at a location and in a manner adapted to insure regular periodic removal of contaminants from a bounce chamber within said cylinder.

In one embodiment, passage means formed in the bounce compressor piston and bounce compressor cylinder, and check valves positioned in the bounce compressor piston, allow the controlled venting of the air contained within the bounce compressor chamber during a portion of the bounce



compressor cycle and allow uncontaminated air to be introduced into the bounce chamber during another portion of the bounce compressor cycle, so as to minimize the contaminants in the bounce chamber. Alternate embodiments are also shown which similarly permit contaminants or contaminated air in the bounce chamber to be vented.

3,694,112

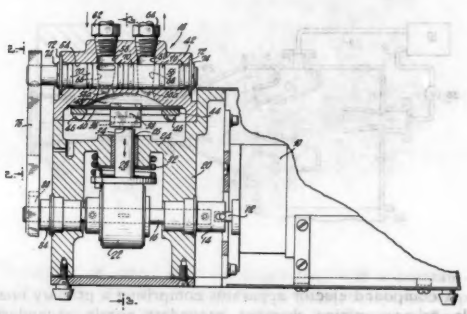
ROTARY VALVE PUMP

David Freedman, Highland Park, N.J., assignor to New Brunswick Scientific Co., Inc.

Filed Oct. 15, 1970, Ser. No. 80,873

Int. Cl. F04b *7/00, 15/02, 17/00, 35/00*

U.S. Cl. 417—519 **5 Claims**



A positive displacement pump capable of pumping liquids in which solids are suspended. The pump has a pump housing provided in its interior with a pump chamber which expands during each suction stroke and contracts during each pressure stroke. A housing wall defines part of the pumping chamber and is formed with inlet and outlet ports through which the pump material flows. A valve body oscillates with respect to the latter housing wall for opening and closing each of the ports in the sequence required to achieve the pumping action. A surface of the housing wall at the ports thereof slidably engages the oscillating valve body so that the latter achieves a shearing action to facilitate pumping of liquids in which solids are suspended.

3,694,113

MULTI-UNIT ROTARY MECHANISM

Charles Jones, Hillsdale, and Murray Berkowitz, Woodcliff Lake, both of N.J., assignors to Curtis-Wright Corporation

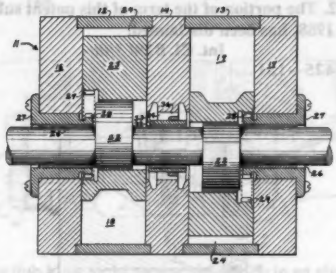
Filed Jan. 12, 1971, Ser. No. 105,905

Int. Cl. F01c *1/02;* **F03c** *3/00;* **F04c** *1/02*

U.S. Cl. 418—60 **3 Claims**

A rotary mechanism of the trochoidal type, having a plurality of operating cavities and a one-piece crankshaft bearing a

plurality of eccentric portions, one for the rotor in each operating cavity. The intermediate wall between adjacent operating cavities of such a mechanism has an aperture through which an eccentric may be passed for assembly of the



mechanism, and a simple and inexpensive split bearing member assembled around the journal of the shaft in the aperture of the intermediate wall, which is then shrunk into fit to hold and support the bearing member.

3,694,114

FLUID FLOW MACHINE WITH AXIALLY BIASSED ROTOR ASSEMBLY

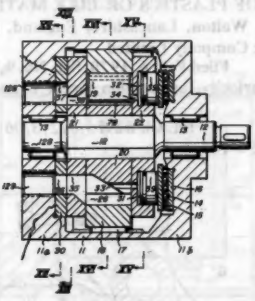
Karl Eickmann, 2420 Isshiki Hayama-machi, Kanagawa-ken, Japan

Filed Dec. 30, 1970, Ser. No. 102,614

Claims priority, application Austria, Jan. 15, 1970, A 386/70

Int. Cl. F01c *19/08*; F03c *3/00*; F04c *15/00*

U.S. Cl. 418—82 **10 Claims**



The rotor assembly of a pump, compressor, or like fluid flow machine, is provided with first passages connecting expanding and contracting working chambers successively with the high pressure and low pressure ports of a stationary valve plate at one end of the rotor assembly, and also with cylinder chambers at the other end of the rotor assembly, provided with pistons pressed against a rotary ring of a thrust bearing so that the rotor assembly is compressed, and pressed against the valve plate to reduce leakage. Other passages connect the high pressure and low pressure ports, and also additional control ports, successively with the inner ends of slot chambers for balancing the inward pressure exerted by the fluid in the working chambers on vanes in the slot chambers.

3,694,115

MOLDING APPARATUS FOR MAKING ANISOTROPIC RING-SHAPED MAGNETS WITH ZONES HAVING A PREFERRED RADIAL DIRECTION

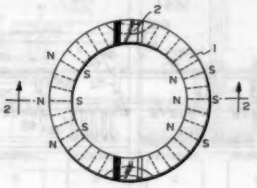
Eric Steingroever, Bonn, Germany, assignor to Magnetfabrik Bonn GmbH. vorm. Gewerkschaft, Windhorst, Postfach, Germany

Division of Ser. No. 759,393, Sept. 12, 1968, abandoned. This application March 30, 1970, Ser. No. 29,311

Claims priority, application Germany, Nov. 9, 1967, P 16 13 319.0

Int. Cl. B30b *11/04*

U.S. Cl. 425—3 **5 Claims**



Apparatus for the production of ring-shaped permanent magnets having radial lines of force from permanent magnet powder and a binder comprises a die holder provided with a liner of hard having high mechanical strength and/or abrasion resistance magnetic material for cooperation with a center ram and opposed end wall rams.

3,694,116

APPARATUS FOR THE PRODUCTION OF FOAMED RESINS

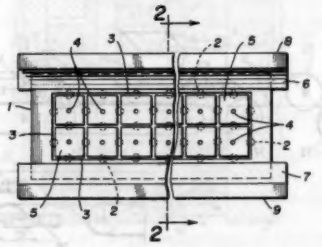
John Gerald McCoy, Newport, and William Rees Foster, Cwmbran, both of England, assignors to Monsanto Chemicals Limited, London, England

Division of Ser. No. 726,857, May 6, 1968, Pat. No. 3,624,192. This application Aug. 17, 1970, Ser. No. 64,554

Claims priority, application Great Britain, May 19, 1967, 23,303/67

Int. Cl. B29f *3/04*

U.S. Cl. 425—4 **5 Claims**

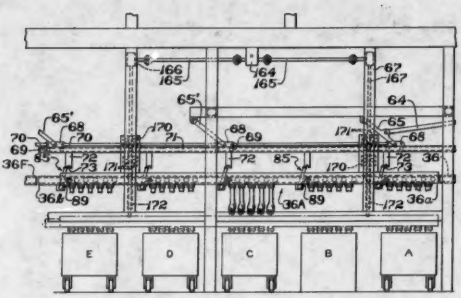


Die assemblies and processes for extruding a foamable thermoplastic polyvinylaromatic resin through a rectangular die orifice into a zone of lower pressure such that foaming of the resin occurs as it moves through the zone, said zone being defined by a pair of opposing concave surfaces maintained at a temperature lower than the extrusion temperature and curved so that they substantially conform to the corresponding surfaces of the freely expanding resin without exerting a substantial compressive force thereon. The die assemblies and processes are particularly useful for the production of low density foamed boards having smooth surfaces.

3,694,117
GLOVE MANUFACTURING

Joseph C. Gould, Route 2, Box 251G, and Robert L. Hayes, Francis St., Rt. 2, both of Honea Path, S.C.

Filed Dec. 2, 1970, Ser. No. 94,482
Int. Cl. B29h *3/044*; B29c *13/04*
U.S. Cl. 425—93 21 Claims

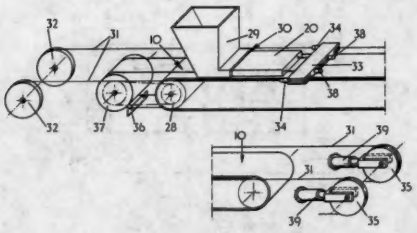


A manufacturing process and apparatus for making surgeon' gloves utilizing a plurality of pallets, each pallet with a plurality of glove forms thereon, moving sequentially through a plurality of stations which form a closed loop. The pallets and glove forms are removably mounted to facilitate substitution of other pallets with other sizes of forms.

3,694,118
PRODUCTION OF PRESTRESSED CONCRETE

David Bickerton Crowder, Barkway, Hertfordshire, England, assignor to Flowcrete Limited, Derby, England

Filed Sept. 29, 1970, Ser. No. 76,377
Claims priority, application Great Britain, Sept. 30, 1969, 47,975/69
Int. Cl. B28b *23/04*
U.S. Cl. 425—111 5 Claims

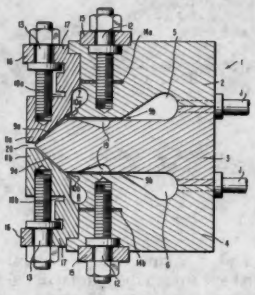


The production of prestressed concrete is effected by feeding pretensioned reinforcing wires through a station at which fluent concrete is supplied. The fluent concrete is deposited on and around the reinforcing wires and is conveyed along with the wires to a desired location such as a station at which the prestressed concrete product is cut up into sections of appropriate length. The rate of feeding of the concrete and pretensioned reinforcing wires is such that the concrete is either cured or set before, on reaching or after said location.

3,694,119
SLOT DIE FOR THE PRODUCTION OF MULTI-LAYER LAMINATES

Robert Scheibling, Cap D'Ail, France, assignor to Siamp-Cedap, Societe anonyme monegasque

Filed Feb. 11, 1969, Ser. No. 798,404
Claims priority, application France, Feb. 13, 1968, 68139702. The portion of the term of this patent subsequent to Oct. 12, 1988, has been disclaimed.
Int. Cl. B29f *3/00*
U.S. Cl. 425—131 4 Claims

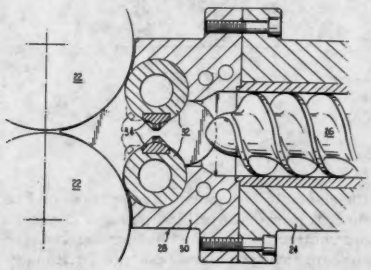


An extrusion nozzle with a discharge slot has a body with a central tongue separating two passages terminating at that slot, each passage consisting of an inner channel and an adjoining outer channel supplied with synthetic-resin material from respective distributing chambers to form a pair of superposed layers on each side of the tongue. The width of each layer is independently controllable by a pair of resiliently deflectable inner lips, remote from the discharge slot, and a pair of resiliently deflectable outer lips, proximal to that slot, whose distance from the tongue is adjustable by respective screws.

3,694,120
APPARATUS FOR THE PRODUCTION OF SHEETS OF PLASTICS OR LIKE MATERIALS

George N. Walton, Lancashire, England, assignor to David Bridge & Company Limited

Filed Feb. 6, 1970, Ser. No. 9,363
Claims priority, application Great Britain, Feb. 7, 1969, 6,775/69
Int. Cl. B29f *3/012*, *3/06*
U.S. Cl. 425—145 8 Claims



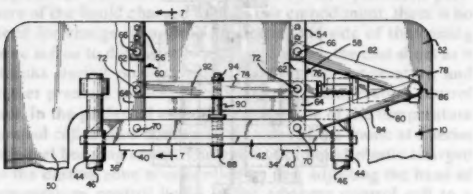
A roller die for use in producing sheets of plastics or like material comprises an extruder having a variable extrusion orifice which may be adjusted to maintain the pressure distribution across the nip of the calender rolls substantially constant. The orifice is at least in part defined by two orifice forms carried by two members which may be rotated to vary the extrusion orifice.

3,694,121

MULTIPLE INJECTION BLOW MOLDING MACHINE

Joseph A. Johnson, Brigantine, N.J., assignor to Jomar Industries, Inc., South Brigantine, N.J.

Filed July 7, 1970, Ser. No. 52,811
Int. Cl. B29f *1/00*; B29d *23/03*
U.S. Cl. 425—168 6 Claims



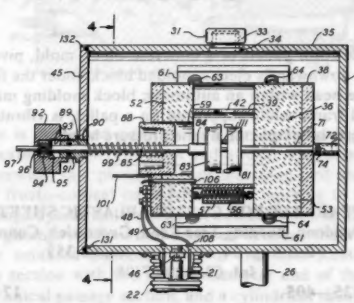
In an injection blow molding machine wherein an elevatable and rotatable turret that carries distinct sets of parison pins on its side faces is surrounded at angularly spaced points by parison mold stations, blow mold stations and ejection stations, the parison clamps at the parison mold stations are mechanically linked together for equalized operation and the turret is so connected to the linkage that it is lifted with the synchronized raising movement of the movable upper halves of the separable parison molds but only one-half the vertical distance thereof whereby the parison pins are equidistant of the part line between the partible halves of the parison molds and also the blow molds when the molds are open so that the pins clear the mold halves as the turret is indexed around the stations.

3,694,122

APPARATUS FOR MOLDING AND FIRING DENTAL PORCELAIN

Ronald F. MacDonald, deceased, late of Orange, Calif., and by Albert J. MacDonald, executor, Van Nuys, Calif., assignors to Joseph L. MacDonald, Medfield, Mass.

Filed Sept. 8, 1970, Ser. No. 70,154
Int. Cl. B29c *3/00*
U.S. Cl. 425—171 9 Claims



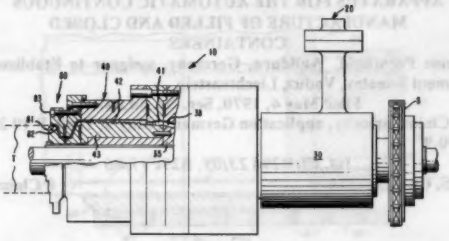
Method and apparatus whereby powdered porcelain or plastic material is charged in the opposing cavities of half flasks, which cavities have been formed about a pattern within the investment of each flask half and wherein the flasks are placed in separated condition within the muffle of a furnace and such separation is maintained until furnace heat is achieved slightly in excess of the liquefying temperature of the powder in the flask and then said flask halves are joined to compress the charge to fill all parts of the molded cavity. Refractory spacer means sensitive to temperature maintain separation between the flasks until the critical temperature is reached. The flask halves may thereafter be compressed together either manually or mechanically. The apparatus includes a tiltable furnace and visual observation of the spacer from the furnace exterior.

3,694,123

APPARATUS FOR MAKING A TUBE OF PLASTIC FILM

Richard Erwin Cook, Richmond, Va.; Donald Lewis Fitzhugh, Topeka, Kans., and George Wilson Lucky, Richmond, Va., assignors to E. I. duPont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 867,750, Oct. 20, 1969, abandoned.
Filed Nov. 11, 1971, Ser. No. 197,801
Int. Cl. B29f *3/02*
U.S. Cl. 425—207 5 Claims



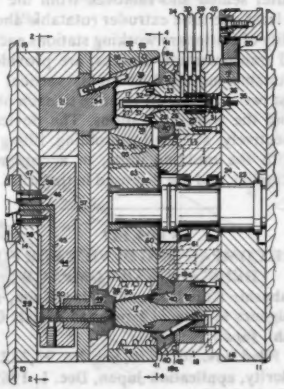
An apparatus for making plastic film wherein flowable polymeric material is extruded through an extrusion die in the form of a tube of film. A die adapter is provided for interrupting the tubular flow of the polymeric material as it moves from an infeed means to the extrusion die and for forcing the flow into a flow path having a single inlet to form an intermediate stream flow whereby to obtain improved flow characteristics.

3,694,124

INJECTION BLOW MOLDING EQUIPMENT

Robert W. Saumsiegle, Meadow Lane, 28, Needham, Mass., and Bruno J. Segmuller, Stein am Rhine, Switzerland, assignors to said Saumsiegle, by said Segmuller

Filed Oct. 16, 1970, Ser. No. 81,248
Int. Cl. B29d *23/03*
U.S. Cl. 425—242 22 Claims



An arrangement of injection blow molding equipment which is in the form of an adapter or tool insertable into and removable from a conventional injection molding machine having a stationary platen with a centrally located plasticizing device and having a reciprocable platen, the tool being adapted to be inserted and removed substantially without modification of the injection molding machine. The equipment includes an annular series of cores mounted upon a turntable which in turn is adapted to be secured to the reciprocable platen of an injection molding machine, and further includes an annular series of molds adapted to be mounted upon the stationary platen, alternate molds in the annular series comprising preform injection molds and blow

molds. Mechanism is provided for angularly oscillating the core supporting turntable so as to alternately insert each core into a preform injection mold and a blow mold.

3,694,125

Patent Not Issued For This Number

3,694,126

APPARATUS FOR THE AUTOMATIC CONTINUOUS MANUFACTURE OF FILLED AND CLOSED CONTAINERS

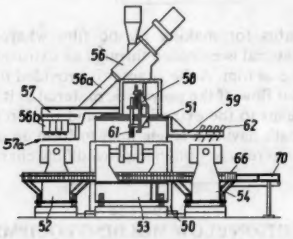
Heinz Pechthold, Walldurn, Germany, assignor to Etablissement Bonatex, Vaduz, Liechtenstein

Filed May 4, 1970, Ser. No. 34,048

Claims priority, application Germany, May 9, 1969, P 19 23 690.9

Int. Cl. B29d *23/03*; B29c *17/00*

U.S. Cl. 425—326 **8 Claims**



An apparatus for the automatic continuous production of filled and sealed containers formed by hollow bodies of thermoplastic material inserted in a mold in moldable condition, which bodies are expanded by the pressure filling method and filled, thereafter sealed and removed from the mold, which comprises at least one tube extruder rotatable about a vertical axis. A plurality of stationary working stations each with molding units and transportation devices, are provided. A rotary carrier is rotatably mounted about its vertical axis and includes at least two arms set off relative to each other and projecting beyond the working stations. The devices and parts thereof, respectively, at least for molding, filling and sealing, cooperate with the molding units, in accordance with the working succession, and are disposed in the arms.

3,694,127

POWDER COMPACTING DEVICE FOR FORMING HELICAL GEAR COMPACT

Mitsuo Takahashi; Koji Ito, and Sadao Kaga, all of Chiba, Japan, assignors to Hitachi Powdered Metals Co., Ltd., Matsudo-shi, Japan

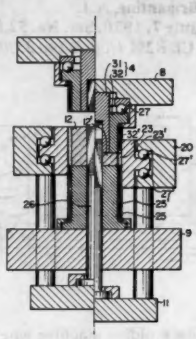
Filed Nov. 30, 1970, Ser. No. 93,712

Claims priority, application Japan, Dec. 1, 1969, 44/95699; Jan. 14, 1970, 45/3475

Int. Cl. B30b *11/02*

U.S. Cl. 425—352 **10 Claims**

A powder compacting device for forming a helical gear compact including a die formed with a bore therein, an upper punch adapted to be closely intruded into said bore from one end of said bore, a lower punch closely fitted into said bore from the other end of said bore and, if required, a core rod axially extending through said upper and lower punches, and being adapted to compact a powder material and form it into a helical gear compact within the space defined by said die, said upper and lower punches and said core rod, wherein at least one of said upper and lower punches consists of at least two punch portions, each being contiguous to each other at a coaxially cylindrical surface, and, among these tools inclusive of said die, all of said punch portions and said core rod, each of at least three of selected tools being formed with a helical



gear contour, and all but one tool of said selected tools being rotatably secured to the respective plate members.

3,694,128

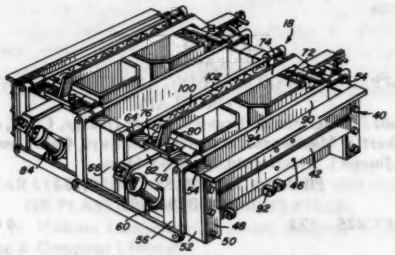
BLOCK MOLDING APPARATUS

Benjamin F. Foxen, 1515 Sharon Drive, Carson City, Nev.

Filed May 6, 1970, Ser. No. 34,996

Int. Cl. B28b *7/04*

U.S. Cl. 425—412 **2 Claims**



The side form panels of a concrete block mold, pivot outwardly to downwardly eject a molded block under the force of a pressure head within an automatic block molding machine. The mold frame while supported on a pallet, is vibrated and the concrete is compacted by the pressure head.

3,694,129

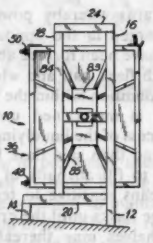
APPARATUS FOR CASTING PLASTIC SHEET

Paul R. Daddona, Burning Tree Road, Greenwich, Conn.

Filed Aug. 24, 1970, Ser. No. 66,357

Int. Cl. B29d *7/08*

U.S. Cl. 425—405 **17 Claims**



An apparatus for casting sheets of plastic is shown. It includes a casting zone defined by two glass surfaces and a mar-

ginal sealing gasket, and an adjacent temperature control cell. The cell is an enclosed chamber comprised of a rigid frame having two extended, semi-rigid sides which may be of sheet metal or glass and which are flexible and responsive to pressures acting upon them. In one embodiment, the cell frame has a rigid brace attached within it, positioned adjacent to the inner surface of its sheet metal or glass side. The brace prevents inward deflection of that side so that the casting zone adjacent to that side is not distorted by the hydrostatic pressure of the liquid charged to it. In this embodiment, there is no need for charge measuring apparatus, the side of the casting zone is free to deflect outwardly and follow the cast sheet as it shrinks during polymerization and higher temperature and higher pressure media can be used in the temperature control cell. In the preferred embodiment the side of the temperature control cell is glass bonded to the sides of the frame at a series of novel bonding zones. The amount of liquid plastic charged to the casting zone is controlled by first adjusting the head of temperature control liquid in the adjacent control cell to a height which just balances the head of liquid plastic in the full casting zone.

3,694,130

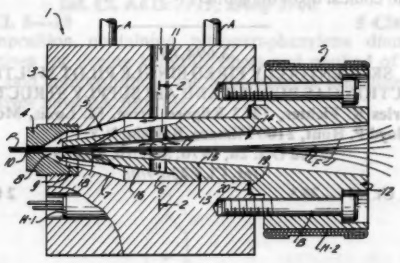
Patent Not Issued For This Number

3,694,131

DIE FOR IMPREGNATING AND COATING FILAMENTARY MATERIAL

James L. Stuart, Evansville, Ind., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed March 25, 1971, Ser. No. 127,909
Int. Cl. B28b *23/00*
U.S. Cl. 425—461 **9 Claims**



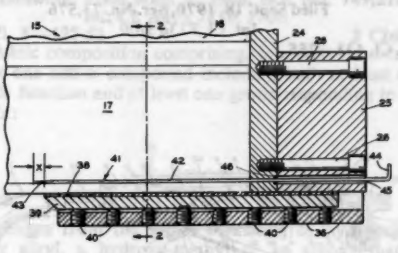
A die is described comprising a die body having passage means extending therethrough and a resin inlet communicating therewith; said passage means including first and second coaxial frusto-conical passage sections tapering in the same direction, a cylindrical passage section coaxial with the frusto-conical passage sections and disposed between them connecting the smallest diameter end of the first frusto-conical passage section with the largest diameter end of the second frusto-conical passage section, and a cylindrical sizing passage section communicating with the smallest diameter end of the second frusto-conical passage section and forming the outlet of said passage means from said die body; a pilot member having a flange portion, a nose portion and a guide passage means extending therethrough having an inlet end in the flange portion and a tapered outlet end in the nose portion; said pilot member being mounted on said die body in a manner whereby said nose portion of the pilot member extends into the passage means of the die body forming an annular chamber extending at least from the resin inlet of the die body to the interior region of the second frusto-conical passage section spaced from the cylindrical sizing passage section; said nose portion including a frusto-conical section tapering toward and terminating at the outlet end of said guide passage means and having a plurality of orifices therein connecting said annular chamber with said guide passage means; and a first heating means for said die body and a second heating means for said pilot member.

3,694,132

EXTRUSION DIE DECKLE MEANS

William S. Bunte, Somerville, and Lino E. De Gasperis, Clinton, both of N.J., assignors to Egan Machinery Company

Filed Jan. 21, 1971, Ser. No. 108,459
Int. Cl. B29d *11/04*
U.S. Cl. 425—466 **12 Claims**



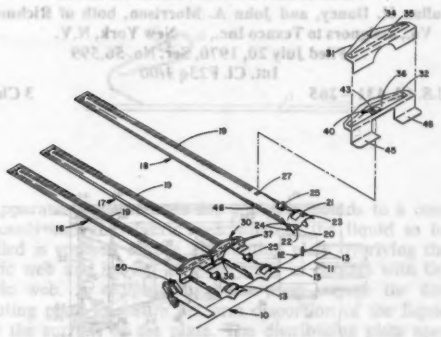
An extrusion die having a discharge orifice in the form of a relatively long narrow slot and adapted to extrude a film or sheet of a flowable plastic material. The die is equipped with external deckle means adjustably positioned along the outer end of the discharge orifice and internal deckle means adjustably positioned along the inner end of the discharge orifice. The die and the external and internal deckle means are so constructed and arranged as to effectively regulate and control both the width and the thickness of a plastic film or sheet that is extruded from the die.

3,694,133

FUEL BURNER CROSSOVER ARRANGEMENT

Herman W. Wilkerson, 500 Cliff Drive, Pasadena, Calif.

Filed June 3, 1971, Ser. No. 149,426
Int. Cl. F23d *13/02*
U.S. Cl. 431—191 **6 Claims**



An elongated burner body having a series of fuel ports extending along the axis of the burner body is provided with a crossover fuel aperture adjacent the fuel inlet end of the burner. A crossover body comprising a hollow transversely extending member is provided with a crossover fuel inlet aperture from the downstream edge of which extends a depending scoop element. The crossover body is assembled on the burner body so that the crossover fuel apertures are in registration with each other. The scoop serves as a means for locating the crossover body with respect to the burner body and to direct fuel from the burner into the crossover. The scoop element is provided with an opening which allows a portion of the fuel

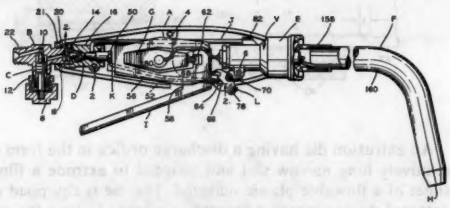
mixture to pass through the opening to directly supply gas to the burner fuel ports most closely adjacent to the crossover and thereby to provide a dependable source of fuel for smooth ignition by the crossover.

3,694,134

ELECTRICALLY IGNITED GAS TORCH WITH SHUT-OFF VALVE AND LATCH THEREFOR

Albert Ross, Willowick, Ohio, assignor to Harris Calorific Company, Cleveland, Ohio

Filed Sept. 18, 1970, Ser. No. 73,576
Int. Cl. F23q 3/00
U.S. Cl. 431—255 **6 Claims**



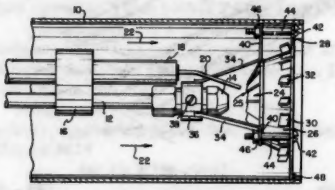
A plumber's gas torch has a conventional flame-adjustment valve, in series with that valve, an one-off valve is lever operated and is latched open automatically on operation of the lever. A piezoelectric igniter is actuated by the lever to ignite the torch simultaneous with opening of the on-off valve. Another series valve is automatically closed when the torch tip is unscrewed and is reopened as another tip is attached. A trigger releases the latch and allows the on-off valve to close under spring pressure.

3,694,135

FLAME RETENTION BURNER HEAD

Julian H. Dancy, and John A. Morrison, both of Richmond, Va., assignors to Texaco Inc., New York, N.Y.

Filed July 20, 1970, Ser. No. 56,599
Int. Cl. F23q 3/00
U.S. Cl. 431—265 **3 Claims**



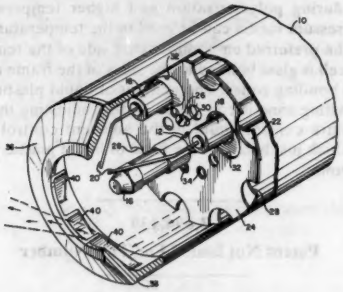
A flame retention burner head in which the flame retention baffle carries an annular ring on its outer periphery which extends downstream sufficiently to elongate the stationary vortices formed thereby. The atomizing nozzle of the burner is arranged to inject the fuel particles into the vortices, and peripherally spaced louvres on the ring are arranged to direct streams of air inwardly into the flame at the downstream end of the elongated vortices.

3,694,136

OIL BURNER

Norman E. Flournoy; Julian H. Dancy, both of Richmond, and Raymond Trippet, Highland Springs, all of Va., assignors to Texaco Inc.

Filed Oct. 5, 1970, Ser. No. 78,069
Int. Cl. F23q 3/00
U.S. Cl. 431—265 **4 Claims**



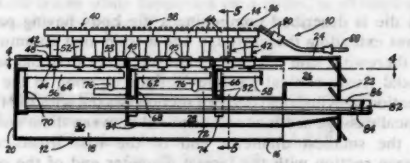
A gun type oil burner having a metering plate with adjustable orifices arranged between the burner tip and the burner fan in which the adjustable orifices are peripherally disposed along the inner surface of the blast tube and are axially lined with radial and spirally arranged channels on the inside of the frusto conical tip of the burner.

3,694,137

SEQUENTIALLY FIRED SINGLE PILOT MULTI-SECTION GAS BURNER AND AIR SUPPLY STRUCTURE

Charles R. Fichter, 1212 Kilgore Drive, St. Louis, Mo., and Lloyd P. Hunt, 2100 Filmore, Buffalo, N.Y.

Filed Oct. 26, 1970, Ser. No. 83,859
Int. Cl. F23q 9/08
U.S. Cl. 431—283 **2 Claims**



There is disclosed an integral three section gas burner construction and controls including automatic sequential lighting of the sections on demand and air supply structure. A pilot unit ignites a first burner section when gas is supplied. The first burner section includes some burners adjacent to a second and a third burner section, said second burner section and said third burner section being ignited from said respective adjacent burners of said first burner section on demand for more heat and supply of gas. Each burner section has a separate compartment for the supply of secondary air to the burners.

CHEMICAL

3,694,138
DYEING HUMAN HAIR WITH N,N-DIARYL ALKYLENEDIAMINE OXIDATION DYE COMPOSITIONS

Gregoire Kalopissis, Paris, and Andree Bugaut, Bologne-sur-Seine, France, assignors to Société Anonyme dite: LOREAL, Paris, France

No Drawing. Filed July 31, 1969, Ser. No. 846,577
Claims priority, application Luxembourg, Aug. 2, 1968, 56,631
Int. Cl. A61k 7/12
U.S. Cl. 8—10.2 3 Claims

N,N'-diaryl alkylenediamine oxidation dye compositions that are suitable for dyeing live human hair are disclosed.

3,694,139

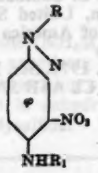
Patent Not Issued For This Number

3,694,140
METHOD AND COMPOSITION CONTAINING NITROPARAPHENYLENE DYES FOR DYEING KERATINIC FIBERS

Gregoire Kalopissis, Paris, Andree Bugaut, Bologne-sur-Seine, and Vahan Zorayan, Enghien-les-Bains, France, assignors to L'Oreal, Paris, France

No Drawing. Filed May 16, 1968, Ser. No. 729,499
Claims priority, application France, May 16, 1967, 53,676
The portion of the term of the patent subsequent to Nov. 2, 1988, has been disclaimed
Int. Cl. A61k 7/12; D06p 3/02
U.S. Cl. 8—10 5 Claims

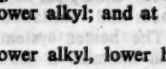
Composition containing nitroparaphenylene diamine derivatives for dyeing keratinic fibers and method of applying said composition to the hair, wherein said diamine derivatives have the formula:



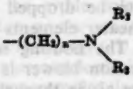
(I)

in which:

R represents H or a lower alkyl;
Z represents H, an



radical in which R' represents
H, methyl, or NO_2, or an OC—R'' radical in which
R'' represents a lower alkyl; and at least one of R and Z is H;
R_1 represents a lower alkyl, lower hydroxyalkyl, lower alkoxyalkyl or



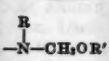
in which *n* is a whole number between two and six inclusive, while R_2 and R_3 represent H, a lower alkyl, or a lower hydroxy alkyl, and the alkyl portion of R, R'', R_1, R_2 and R_4 having 1 to 6 carbon atoms.

3,694,141
METHOD OF HAIR CONDITIONING

Gregorie Kalopissis, Paris, Jean-Louis Abegg, Le Perreux, and Guiliana Ghilardi and Henri Philippe de Beaulieu, Paris, France, assignors to Societe Anonyme dite: l'Oreal

No Drawing. Filed Aug. 1, 1968, Ser. No. 749,278
Int. Cl. A61k 7/10, 7/06
U.S. Cl. 8—127.51 3 Claims

Cosmetic composition comprising, in a suitable carrier, at least one active compound including both at least one disulfide function and at least one group responding to the formula:



in which:

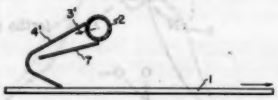
R is selected from the group consisting of hydrogen, a lower alkyl, a hydroxy-methyl or an alkoxy methyl radical;
R' is selected from the group consisting of hydrogen, and a lower alkyl radical;

the nitrogen atom in said group being attached to a remainder which is sufficiently electrophile to prevent the immediate release of formol.

3,694,142
APPARATUS AND METHODS FOR APPLYING LIQUIDS TO FABRICS

Manfred Schulerer, Erbach, Odenwald, Germany, assignor to Bruckner-Apparatebau Michelstadt G.m.b.H., Erbach, Odenwald, Germany

Filed Dec. 21, 1970, Ser. No. 99,927
Claims priority, application Germany, Dec. 23, 1969, P 19 64 594.4
Int. Cl. B05c 5/00
U.S. Cl. 8—151 10 Claims



Apparatus and methods for applying liquids to a continuously movable fabric web wherein the liquid to be applied is sprayed onto a distributing plate overlying the fabric web and having its lower edge in contact with the fabric web. A reciprocable brush may engage the distributing plate to assure uniform dispersion of the liquid over the surface of the plate. The distributing plate may be vibrated to effect uniform dispersion of the liquid over the surface of the plate.

3,694,143
SPINNING PROCESS FOR HAIR GOODS

Lala B. McCurry, 5286B Trail Lake Drive, Fort Worth, Tex. 76133

Filed May 1, 1971, Ser. No. 148,660
Int. Cl. D06p 7/00
U.S. Cl. 8—158 4 Claims

The specification discloses a process and machine for removing moisture from hair goods such as wigs or hair pieces when they are being serviced following cleaning

with a liquid solution. In the moisture removing process, the hair goods are inserted into the container of a spinning machine and the container spun to remove moisture from

the hair goods. In the embodiment disclosed, the container has an internal diameter of about 15 inches and is spun at a rate of about 1725 r.p.m.

3,694,144

CORROSION INHIBITOR OF DIHYDRO-AROMATIC NITROGEN-HETEROCYCLIC PHOSPHONATES

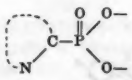
Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, Wilmington, Del.

No Drawing. Original application May 31, 1968, Ser. No. 733,328. Divided and this application Jan. 18, 1971, Ser. No. 107,557

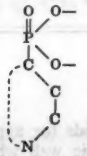
Int. Cl. C23f *11/16, 11/00*

U.S. Cl. 21—2.7 **5 Claims**

Nitrogen-heterocyclic phosphonates wherein the phosphonate group is otho- or para- to the nitrogen heterocyclic group, where the compounds are characterized as follows:

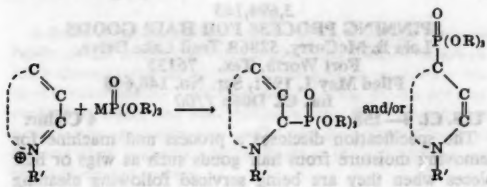


and



wherein the dotted line represents a cyclic structure which cyclic structure may be the sole cyclic structure, or may be attached to other cyclic groups.

These nitrogen heterocyclic phosphonates are prepared by reacting an aromatic nitrogen heterocyclic compound, wherein the nitrogen atom is in the form of a salt or a quaternary, with a phosphite salt, preferably in the form of esters of the phosphite as exemplified by the following equation:



These compounds which may be characterized as phosphonates of dihydroaromatic nitrogen heterocycles have many uses including their use as biocides such as bacteriocides, herbicides, corrosion inhibitors, chelating agents, etc.

3,694,145

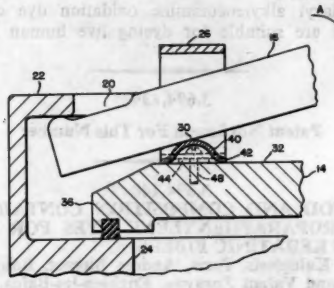
ADJUSTABLE SHIM FOR PRESSURE VESSEL DOORS

Charles H. Stevens, Honeoye Falls, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Nov. 10, 1970, Ser. No. 88,452

Int. Cl. B01j *3/00*; A61l *3/02*

U.S. Cl. 21—91 **6 Claims**



An adjustable shim in combination with the door closing apparatus of sterilizer or other pressure vessel doors. The shim **40** carried by the door **32** is adjustable longitudinally of the toggle or locking bar **16** to raise or lower each bar for providing a uniform sealing force about the periphery of the door.

3,694,146

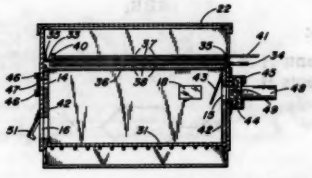
FORMALDEHYDE GAS GENERATOR/ DISSEMINATOR

Edmond A. Roy, James C. Coolbaugh, Wayne D. Norris, and Herbert G. Arm, United States Navy, assignors to the United States of America as represented by the Secretary of the Navy

Filed Jan. 25, 1971, Ser. No. 109,286

Int. Cl. A61l *3/00*

U.S. Cl. 21—119 **6 Claims**

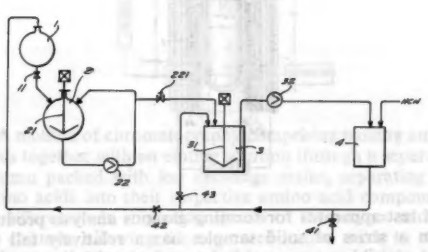


A heater system for biological sterilization of large volume enclosed spaces and ventilation systems with dry formaldehyde gas. The heater system includes an enclosed housing which contains a heater element, a gas chamber and a reservoir. Control means permits paraformaldehyde flakes to be dropped from the reservoir onto a plate on the heater elements in order to form a gas from the flakes. The housing is provided with an inlet and outlet. A suction blower is connected with the outlet, and by drawing air in through the inlet, the generated gas is drawn out of the gas chamber and forced into any desired space by use of any suitable means such as an air conditioning, heating or ventilation duct system to which the outlet of the blower is secured.

3,694,147
PROCESS FOR THE PURIFICATION OF MOLYBDENUM TRIOXIDE
James Louis Drobnick, Lakewood, and Tom Tse-Pu Chen, Arvada, Colo., assignors to Molybdenum Corporation of America, New York, N.Y.
No Drawing. Continuation of abandoned application Ser. No. 780,905, Dec. 3, 1968. This application Nov. 18, 1971, Ser. No. 200,234
Int. Cl. C22b *59/00*
U.S. Cl. 423—53 3 Claims

This invention provides a process for extracting impurities from a molybdenum oxide concentrate which comprises leaching the concentrate with an aqueous solution of an ammonium halide and a hydrohalic acid.

3,694,148
PROCESS OF MAKING AMMONIUM RHODANIDE (NH_4SCN)
Hans Pfleger, Neu-Isenburg, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany
Filed Aug. 13, 1969, Ser. No. 849,631
Claims priority, application Germany, Aug. 14, 1968, P 17 92 279.1
Int. Cl. C01c *3/00, 1/00;* C01b *21/54*
U.S. Cl. 423—366 3 Claims



Ammonium rhodanide (NH_4SCN) is made by reacting anhydrous ammonia, anhydrous hydrogen cyanide and sulfur in a medium comprising a solution of ammonium rhodanide (NH_4SCN) in anhydrous ammonia and containing ammonium polysulfide.

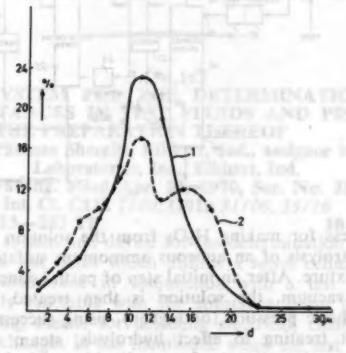
3,694,149
PURIFIED BLUE COLORED INORGANIC MACROMOLECULAR COMPLEX COMPOUNDS
Yoshio Matsumoto, Fujisawa, Michiko Shirai, Tokyo, Hiroko Saito, Yokohama, and Takeshi Kawashima and Yuzuru Sakabe, Tokyo, Japan, assignors to Kitazato Gakuen
No Drawing. Filed Mar. 30, 1970, Ser. No. 23,994
Claims priority, application Japan, Mar. 31, 1969, 44/24,692
Int. Cl. C01c *3/12, 3/08*
U.S. Cl. 23—293 1 Claim

Intensely colored inorganic macromolecular complex compounds or the solution thereof for use in determining the void volume (Vo) of the gel column are provided by a process wherein the crude solution of the so-called Soluble Prussian Blue or the reaction solution resulting from the mixture of chromium (III) salt and alkali ferrocyanide is purified macromoleculologically, that is, purified to provide the macromolecular substance possessing the desired range of magnitude of molecular size, by means of gel chromatography which comprises a function of molecular sieve, or alternatively, by means of a salting out procedure.

3,694,150
PREPARATION OF MONOAMMONIUM ALUMINUM TETRAFLUORIDE
Gustave E. Kidde, 294 California Terrace, Pasadena, Calif. 91105
No Drawing. Continuation-in-part of applications Ser. No. 802,274, Feb. 25, 1969, now Patent No. 3,556,717, and Ser. No. 839,096, July 3, 1969, now Patent No. 3,525,584, which is a continuation of applications Ser. No. 328,126, Dec. 4, 1963, Ser. No. 483,241, Aug. 27, 1965, and Ser. No. 575,205, July 18, 1966. This application July 10, 1970, Ser. No. 53,999
The portion of the term of the patent subsequent to Aug. 25, 1987, has been disclaimed
Int. Cl. C01f *7/50, 7/52*
U.S. Cl. 423—465 2 Claims

The disclosure relates to a hydrometallurgical process for preparing monoammonium aluminum tetrafluoride by reaction of acid salts of aluminum with ammonium fluoride in aqueous solution. Useful acid salts of aluminum include aluminum sulfate, ammonium alum, aluminum chloride and aluminum nitrate.

3,694,151
METHOD OF MANUFACTURING α-STRONTIUM-HYDROPHOSPHATE
Adrianus Cornelis Josephus Maria Snethorst and Wilhelmus Petrus Johannes Looymans, both of Emmasingel, Eindhoven, Netherlands
Filed Oct. 30, 1970, Ser. No. 85,365
Claims priority, application Netherlands, Nov. 6, 1969, 6916743
Int. Cl. C01b *1/36, 25/32*
U.S. Cl. 423—307 8 Claims



A method of manufacturing α-$SrHPO_4$ by reacting aqueous solutions of a strontium salt and a monohydrophosphate in the presence of an aminopolycarboxylic acid.

3,694,152
PROCESS FOR PRODUCING SYNTHETIC ZEOLITE
Riccardo Sersale, Enrico Franco, Rosario Ajello, and Carmine Colella, Naples, Italy, assignors to Snam Progetti, S.p.A., Milan, Italy
No Drawing. Filed Oct. 13, 1969, Ser. No. 866,014
Claims priority, application Italy, Oct. 18, 1968, 22,654/68, Patent 845,354
Int. Cl. C01b *33/28*
U.S. Cl. 423—329 1 Claim

Synthetic crystalline zeolites are prepared by treating natural glasses, such as Lipari pumice, and synthetic glasses prepared by melting a suitable mixture of oxides or silicoaluminates with an alkaline solution at a temperature within the range of 50° C. to 150° C. until the

crystalline zeolite forms. Faujasite is prepared by treating each of pulverized pumice and a synthetic glass having the composition $3Na_2O.Al_2O_3.4SiO_2$ with a sodium hydroxide solution at an elevated temperature.

3,694,153

LIQUID-LIQUID EXTRACTION PROCESS FOR THE PURIFICATION OF PHOSPHORIC ACID

Kenneth A. Williams, La Mirada, Calif., and David R. Stern, deceased, late of Fullerton, Calif., by Audrey E. Stern, executrix, Fullerton, Calif., assignors to Occidental Petroleum Corporation, Los Angeles, Calif.

No Drawing. Filed Oct. 30, 1970, Ser. No. 85,807

Int. Cl. C01b *25/18, 25/22*

U.S. Cl. 423—321 **15 Claims**

Liquid water immiscible organic sulfonic acids are used to extract metallic impurities from crude phosphoric acid solutions containing up to 54% by weight P_2O_5, by a liquid-liquid extraction.

3,694,154

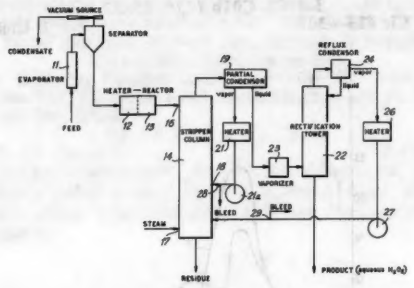
PRODUCTION OF HYDROGEN PEROXIDE FROM AQUEOUS ACIDIC SOLUTION OBTAINED BY HYDROLYSIS

William Sheridan Harper, Williamsville, and David Wayne Daigler, East Aurora, N.Y., assignors to FMC Corporation, New York, N.Y.

Filed Jan. 23, 1968, Ser. No. 699,958

Int. Cl. C01b *15/02;* **B01d** *3/38, 1/00*

U.S. Cl. 423—585 **5 Claims**



Process for making H_2O_2 from the solution obtained by electrolysis of an aqueous ammonium sulfate-sulfuric acid mixture. After an initial step of partial concentration under vacuum, the solution is then treated at about atmospheric pressure (or higher), using successive steps of heat treating to effect hydrolysis, steam stripping, partial condensation to form a liquid enriched in H_2O_2, and rectification, to produce about 35% H_2O_2.

3,694,155

Patent Not Issued For This Number

3,694,156

PREPARATION OF Si

James O. Huml, Leigh B. Bangs, and Gilbert S. Layne, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 798,174, Feb. 10, 1969. This application Oct. 19, 1970, Ser. No. 82,150

Int. Cl. C01b *33/02;* **B01j** *17/00*

U.S. Cl. 423—349 **2 Claims**

A process is provided for producing pure Si or Ge in powdered form. A solid mixture of Si or Ge and a sulfide is contacted with a sulfide dissociating reagent which selectively reacts with the sulfide compound to form at least two physical phases comprising powdered Ge or Si and a fluid phase, gaseous and/or liquid, and the phases are separated from each other.

3,694,157

METHOD OF AND APPARATUS FOR FORMING GASEOUS ANALYSIS PRODUCTS FROM SOLID SAMPLES

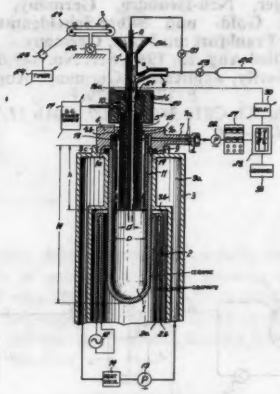
Walter Koch, 29 Im Grund, 4000 Dusseldorf-Lohausen, Germany, Helmut Lemm, 19 Birkenweg, 4231 Blumenkamp, Germany, and Eitel Voss, Duisburg-Hamborn, and Peter Hospital, Walsum, Germany; said Voss and said Hospital assignors to said Koch and said Lemm

Filed Feb. 9, 1970, Ser. No. 9,568

Claims priority, application Germany, Mar. 12, 1969, P 19 12 526.9

Int. Cl. G01n *31/12*

U.S. Cl. 23—230 PC **6 Claims**



A test apparatus for forming gaseous analysis products from a series of solid samples has a relatively tall upright crucible open at the top and a conduit extending with clearance into the crucible. This conduit has a lateral inlet into which a carrier and/or reaction gas, e.g. O_2, is fed and the crucible has an upper outlet, above and around the lower end of the conduit, which is connected to a chemical-analysis instrument such as a mass spectrometer. The lower end of the crucible is heated and the heater element and entire crucible are cooled by a double-walled jacket. The inflowing carrier forms a gas barrier to the influx of air. Samples are introduced, one after another at short intervals (e.g. 30 seconds or less), into the conduit, without interrupting the gas supply or the heating of the crucible.

3,694,158

PROCESS FOR THE SIMULTANEOUS DETERMINATION OF GLUCOSE AND FRUCTOSE

Karl Lauer, Strahlenburg, Schriesheim, Helmut Spingler, Mannheim, Karl-Erhard Wallach, Lampertheim, Hesse, and Georg Stoeck, Mannheim-Waldhof, Germany, assignors to C. F. Boehringer & Soehne GmbH, Mannheim-Waldhof, Germany

Continuation of application Ser. No. 569,327, Aug. 1, 1966. This application Feb. 20, 1970, Ser. No. 14,706

Claims priority, application Germany, Dec. 15, 1965, B 84,982

Int. Cl. G01n *21/40, 21/46*

U.S. Cl. 23—230 R **7 Claims**

Process for the simultaneous determination of glucose and fructose in aqueous solutions thereof, having a temperature between 50 and 75° C., such as the warm eluates recovered from an ion exchange apparatus used to separate an invert sugar solution into its components, which

involves measuring the optical rotation and refractive index of the warm solutions and relating the measurements to the glucose and fructose concentrations in the solutions.

3,694,159

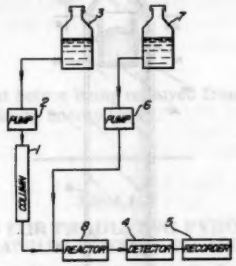
Patent Not Issued For This Number

3,694,160

PROCESS FOR ANALYSIS OF AMINO ACIDS BY LIQUID CHROMATOGRAPHY AND COLOR DEVELOPING MEDIUM ADAPTED THEREFOR

Hisayuki Sagusa, Katsuta, and Seiji Takeuchi and Yoshijiro Arikawa, Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 9, 1971, Ser. No. 122,356
Claims priority, application Japan, Mar. 11, 1970, 45/20,132
Int. Cl. G01n *31/08, 31/22*
U.S. Cl. 23—230 R **7 Claims**



A method of chromatography comprising passing amino acids together with an eluting solution through a separator column packed with ion exchange resins, separating the amino acids into their respective amino acid components by differences in migration speeds of the amino acids in the column, allowing the separated amino acids to react with a color-developing solution containing ninhydrine and its reducing agent by heating thereby to obtain colored substances and analyzing the amino acids by hues of the colored substances. The color-developing solution contains a naphthenic diaminotetraacetic acid for masking heavy metals.

3,694,161

METHOD FOR MEASURING PLATELET AGGREGATION

Richard Raymond Kleszynski and James Winslow Bastian, Park Forest, Ill., assignors to Armour Pharmaceutical Company, Chicago, Ill.

No Drawing. Filed Apr. 14, 1971, Ser. No. 134,026
Int. Cl. G01n *33/16*
U.S. Cl. 23—230 B **6 Claims**

A method for rapidly and accurately measuring platelet aggregation in which prior to counting, aliquot samples of whole blood are treated with anticoagulate, then an aggregating agent, shaken, and centrifuged. Method allows measurement of multiple samples simultaneously and the results obtained therefrom are statistically reproducible.

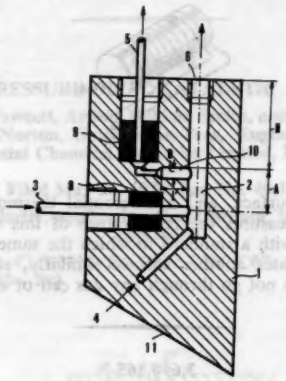
3,694,162

APPARATUS FOR ABSORBING GASES IN LIQUIDS

Gunter Kurz, Oberglatt, Karlheinz Otto Laube, Effretikon, and Alfred Adalbert Martinelli, Zurich, Switzerland, assignors to Zellweger Ltd., Uster, Switzerland

Filed Mar. 19, 1970, Ser. No. 21,031
Int. Cl. G01n *31/06*
U.S. Cl. 23—253 R **10 Claims**

Apparatus for absorbing gases in liquids and more particularly the measurement of a constituent of gas mixture for continuous process control and for controlling high-velocity reactions. The apparatus comprises a mixing absorption chamber disposed in a housing, first and second inlet conduit means communicating with said mixing absorption chamber, first and second outlet conduit



means communication with said mixing absorption chamber and measuring cell means associated with the first inlet conduit means and the first outlet conduit means for continuously analyzing a sample before it is introduced to and after it is removed from the mixing absorption chamber.

3,694,163

TEST SYSTEM FOR THE DETERMINATION OF SUBSTANCES IN TEST FLUIDS AND PROCESS FOR THE PREPARATION THEREOF

Robert Thomas Sherelis, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,104
Int. Cl. C12k *1/10;* **G01n** *31/06, 33/16*
U.S. Cl. 23—253 TP **10 Claims**

A test system and device for the determination of substances in test fluids which utilizes a novel cellulose derivative membrane in conjunction with a test reagent specifically reactable with the substance being detected and sensing means for detecting electrical, chemical or physical changes in the membrane when the test reagent contacts the substance being detected. The membrane is prepared using a controlled organic phase evaporation: aqueous inversion process from a solvent solution of polymeric cellulose derivative and an interacting swelling agent, preferably formamide, said test reagent contained in said solution and the resulting membrane in either dissolved or dispersed form.

3,694,164

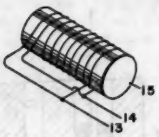
CARBON DIOXIDE SENSORS

Karl R. Guenther, Middleton, Wis., assignor to Bjorksten Research Laboratories, Inc.

Filed Dec. 11, 1970, Ser. No. 97,072
Int. Cl. G01n *21/26, 25/48, 27/12*
U.S. Cl. 23—254 R **5 Claims**

A system for sensing carbon dioxide content of a gas, in which the surface changes in properties reversibly when in contact with said gas. This is employed together with a means for effecting said contact and a means used for measuring the change in composition. This change

in the surface can be chemical, as for example a complex comprising an amine which reversibly absorbs carbon dioxide; or a condition of temperature, in which case the heating effect of an infra red radiation source placed at some distance from the sensing surface, causes a warming of this surface, and a differential thermometer arrangement measures the temperature of this surface in comparison with a standard in which the same infra red source irradiates another surface similarly, except that the light does not go through any gas cell of changeable composition.



3,694,165

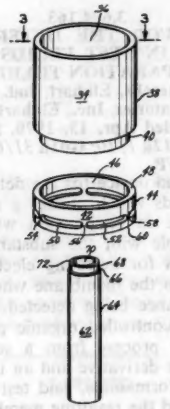
CRUCIBLE APPARATUS FOR A SEMICONDUCTOR CRYSTAL PULLER

Horst G. Kramer, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 11, 1970, Ser. No. 62,938

Int. Cl. B01j *11/18*

U.S. Cl. 23—273 SP 12 Claims



Crucible apparatus for a semiconductor crystal puller and including a main crucible for housing a molten charge of semiconductor material to be pulled. A hollow crucible base or support member is mounted between the main crucible and an elongated crucible support pedestal, and a portion of the main crucible bottom is suspended in the crucible base member to reduce conductive heat losses therefrom. The crucible base member shields heat radiated from the main crucible and couples into the RF heater coil therefor to even further reduce heat losses from the main crucible. The crucible base member thus minimizes temperature gradients in the main crucible and thereby eliminates an undesirable cooling of the molten semiconductor material during a crystal pulling operation.

3,694,166

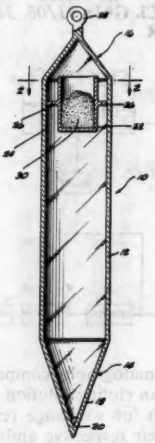
CRYSTAL GROWTH TUBE

Nanse R. Kyle, Long Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Application May 22, 1967, Ser. No. 640,303, now Patent No. 3,519,399, dated July 7, 1970, which is a continuation of application Ser. No. 400,723, Oct. 1, 1964. Divided and this application Nov. 20, 1969, Ser. No. 878,498

Int. Cl. B01j *17/30*

U.S. Cl. 23—273 R 10 Claims



A method of simultaneous purification and growth of semiconductor material into a single stoichiometrically pure crystal by sublimation and condensation of the material. The tube, which is useful for crystal growth for example by either a Bridgman process or by a vapor growth process, comprises a single body having a small container is secured in the upper tube part to contain the charge and a nucleation point in the lower tube part for growth of a single crystal.

3,694,167

DEVICE FOR THE CRYSTALLIZATION BY HEAT EXCHANGE OF A SOLUTE IN SOLUTION IN A LIQUOR

Alphonse Gaillard, Levallois, and Francois Laurenty, Le Touquet, France, assignors to Francois Laurenty, Le Touquet, France

Filed Dec. 30, 1969, Ser. No. 889,082

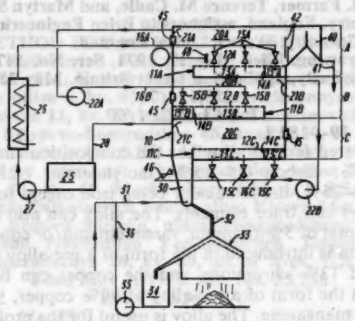
Claims priority, application France, Oct. 31, 1968, 182,652

Int. Cl. B01d *9/02, 9/04*

U.S. Cl. 23—273 R 5 Claims

A crystallization device is provided having a crystallization enclosure which is divided into a plurality of vertical stages by a plurality of fluidization containers. Liquor for treatment is introduced at the lower portion of the enclosure and exhausted liquor is removed at the upper portion of the enclosure. A heat exchange fluid, for example a coolant, is circulated in the enclosure which

is chosen for its immiscibility and chemical non-reactivity with the liquor. Fully grown crystals are used to



cool the coolant before being removed from the enclosure in order to minimize energy losses.

3,694,168

MEANS FOR PRODUCING PYROGENIC TITANIUM DIOXIDE PIGMENT

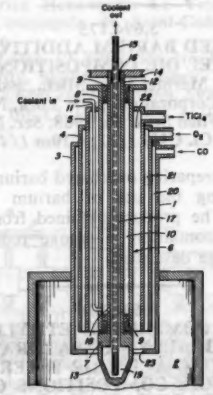
Giovanni Hilgers, Hau Post Bechen, Gerhard Hitzemann, Giershofen, Post Dierdorf, and Achim Kulling, Opladen, Germany, assignors to Titangesellschaft mbH, Leverkusen, Germany

Original application Feb. 12, 1968, Ser. No. 704,895, now Patent No. 3,512,933, dated May 19, 1970. Divided and this application Jan. 28, 1970, Ser. No. 6,384

Claims priority, application Germany, Mar. 6, 1967, T 33,354

Int. Cl. C01g *23/04*; F22d *11/04*

U.S. Cl. 23—284 **4 Claims**



Means for producing pyrogenic titanium dioxide by reaction of gaseous titanium tetrachloride and oxygen in the presence of hot combustion gases produced by the combustion of carbon monoxide the reaction of the several gases being initiated by feeding the several gases from a tubular burner assembly into contact with a rotating relatively cold body within the reaction chamber said cold body rotating at speeds at least 50 times terrestial acceleration whereby the several gases are thoroughly mixed at reaction and the TiO_2 reaction product precluded from adhering to surfaces of the burner assembly.

3,694,169

LOW PRESSURE-DROP CATALYTIC REACTOR

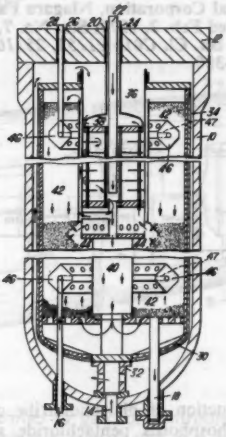
Richard Fawcett, Arthur William Smith, and David Westwood, Norton, Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 25, 1970, Ser. No. 40,172

Claims priority, application Great Britain, May 28, 1969, 26,926/69

Int. Cl. B01j *1/04*; C01c *1/04*; C07c *29/16*

U.S. Cl. 23—289 **5 Claims**



A reactor for synthesising ammonia or methanol comprises a pressure-resisting shell, a catalyst bed of annular section and a short axial heat exchanger. Preferably the reactant gas flows through the catalyst bed convergently towards an outlet near one end of the heat exchanger.

3,694,170

PROCESS FOR PRODUCTION OF SPHERICAL GRANULES OR LUMPS OF ANHYDROUS ALUMINUM CHLORIDE

Koichi Fujii, Arai, Tomoo Sakai, Takada, and Ichiro Kikuchi, Niigata-ken, Japan, assignors to Nippon Soda Kabushiki Kaisha, Tokyo-to, Japan

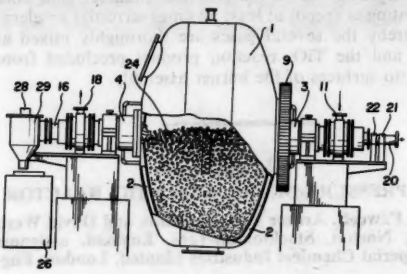
Continuation-in-part of application Ser. No. 661,113, Aug. 16, 1967. This application Mar. 30, 1970, Ser. No. 29,328

Int. Cl. B01d *3/08, 9/00*; C01f *7/58*

U.S. Cl. 23—294 **8 Claims**

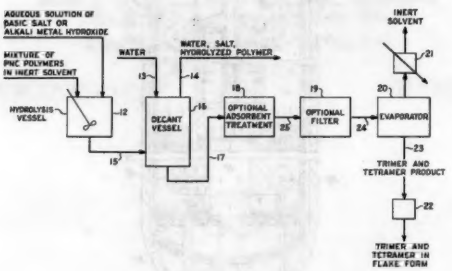
A process for the production of spherical pieces of anhydrous aluminum chloride having diameters of more than 1 mm., comprising providing a layer of pieces of solid anhydrous aluminum chloride in a zone, continuously mix-

ing the solid aluminum chloride in the zone, feeding preheated aluminum chloride vapor into the layer and thereby



into contact with the subdivided solid aluminum chloride and extracting heat from the zone.

3,694,171
METHOD FOR PURIFYING CYCLIC PHOSPHONITRILIC CHLORIDES
Harry Dreifus, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.
Filed Feb. 2, 1970, Ser. No. 7,658
Int. Cl. C01b *21/52, 25/10*
U.S. Cl. 423—300 **15 Claims**



In the production of phosphonitrilic chlorides by the reaction of phosphorus pentachloride and ammonium chloride in a solvent inert to chlorination by use of a process involving the slow addition of at least a major proportion of the phosphorus pentachloride to the ammonium chloride during a period of time corresponding to about 50 to 100 percent of the total time during which the reaction takes place, the proportion of trimeric phosphonitrilic chloride is greatly increased by the addition of a solution of alkali metal hydroxide or basic salt to the reaction mixture upon completion of the reaction and decantation of the watery phase prior to removal of solvent by distillation.

3,694,172
SYNTHESIS OF CHLORINE AND BROMINE PERCHLORATE
Carl J. Schack, Chatsworth, Donald Pilipovich, Agoura, and Richard D. Wilson, Canoga Park, Calif., assignors to North American Rockwell Corporation
No Drawing. Filed May 25, 1970, Ser. No. 40,377
Int. Cl. C01b *11/02, 11/20*
U.S. Cl. 423—466 **19 Claims**

The new oxides chlorine perchlorate ($ClOClO_3$) and bromine perchlorate ($BrOClO_3$) are provided. Chlorine perchlorate is prepared by the reaction of cesium perchlorate or nitronium perchlorate with chlorine fluorosulfate or chlorine monofluoride. Bromine perchlorate is prepared by the reaction of cesium perchlorate or nitronium perchlorate with bromine fluorosulfate or by the reaction of chlorine perchlorate with elemental bromine.

3,694,173
FERROUS ALLOYS
Edwin B. Farmer, Terence M. Cadle, and Martyn S. Lane, Coventry, England, assignors to Brico Engineering Limited, Coventry, Warwickshire, England
No Drawing. Filed May 27, 1971, Ser. No. 147,706
Claims priority, application Great Britain, May 28, 1970, 25,654/70
Int. Cl. B22f *1/00*
U.S. Cl. 29—182.1 **11 Claims**

A sintered ferrous alloy has the composition chromium 10.5–15%, carbon 0.5–2.5%, molybdenum 0.25–5.0%, copper 3–25%, the remainder being iron except for usual impurities and trace elements. The alloy can also contain up to a total of 5% titanium, vanadium and/or cobalt. The chromium is introduced in the form of a pre-alloy of 87% iron and 13% chromium, and the copper can be introduced in the form of a pre-alloy of 90% copper, 5% iron and 5% manganese. The alloy is useful for the production, by powder metallurgy, of valve seat inserts for internal combustion engines.

3,694,174
DUAL PROPERTY STEEL ARMOR
Bill N. Briggs, Santa Ana, Calif., assignor to the United States of America as represented by the Secretary of the Army
No Drawing. Filed May 13, 1971, Ser. No. 143,233
Int. Cl. B32b *15/00*
U.S. Cl. 29—196.1 **4 Claims**

Disclosed is a dual property steel armor material in the form of a composite, roll-bonded structure having an outer or impact layer of an improved alloy of steel capable of shattering hardened steel armor piercing projectiles and a high toughness backing layer of an improved alloy of steel to achieve multiple strike integrity. The outer or impact layer is a low carbon steel alloy containing the carbide forming elements chromium, molybdenum, and vanadium along with manganese, silicon, and nickel. The high toughness backing layer is comprised of a lower carbon content of a low carbon steel alloy than the steel alloy used for outer impact material. The composite structure is provided with improved ballistic performance through thermal-mechanical processing of a properly constituted alloy system.

3,694,175
OVERBASED BARIUM ADDITIVE AND FUEL OIL COMPOSITION
Charles E. Marble, Troy, Mich., assignor to Ethyl Corporation, New York, N.Y.
No Drawing. Filed Sept. 16, 1968, Ser. No. 762,369
Int. Cl. C10l *1/32;* C10m *1/40*
U.S. Cl. 44—51 **10 Claims**

A process for preparing overbased barium hydrocarbon sulfonate featuring the use of barium sulfide as the barium source. The product obtained from this process and diesel fuel containing a smoke reducing quantity of this product are described.

3,694,176
POLYMERS COMPRISING ETHYLENE AND ETHYLENICALLY UNSATURATED DICARBOXYLIC ACIDS OR ESTERS THEREOF, AND OIL COMPOSITIONS CONTAINING SAID POLYMERS
Harold N. Miller, Millington, N.J., assignor to Esso Research and Engineering Company
No Drawing. Filed Apr. 1, 1968, Ser. No. 717,916
Int. Cl. C10l *1/18*
U.S. Cl. 44—62 **4 Claims**

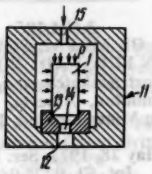
Polymers comprising a major molar amount of ethylene and a minor molar amount of an alpha-beta ethylenically

unsaturated dicarboxylic type monomer such as: dicarboxylic acid, or its anhydride, or a mono or diester thereof, having a number average molecular weight of about 500 to 50,000 are useful as wax crystal modifiers in petroleum oil.

3,694,177
METHOD FOR MAKING ABRASIVE TOOLS

Leonid Fedorovich Vereschagin, Kutuzovsky prospekt 2/1, kv. 231; Evgeny Nikolaevich Yakovlev, Rusakovskaya ulitsa 4, kv. 63; Jury Sergeevich Konyaev, ulitsa Fersmana 11, kv. 26; and Evgeny Valentinovich Polyakov, Belyaevo-Bogorodskoe 46, kvartal 39, kv. 73, all of Moscow, U.S.S.R.; Albert Pavlovich Novikov, Podolsky raion, p/o Akademgorodok, ulitsa Tsentralnaya 10, kv. 59, Moskovskaya Oblast, U.S.S.R.; and Valentin Nikolaevich Bakul, ulitsa Kirova 34-a, kv. 12; Gely Fomich Skripko, ulitsa Vishgorodskaya 33, kv. 13; and Nekhemian Veniaminovich Tsypin, ulitsa Dorogozhitskaya 26, kv. 59, all of Kiev, U.S.S.R.

Filed May 1, 1970, Ser. No. 33,738
Int. Cl. B24d *3/00*
U.S. Cl. 51—293 **2 Claims**

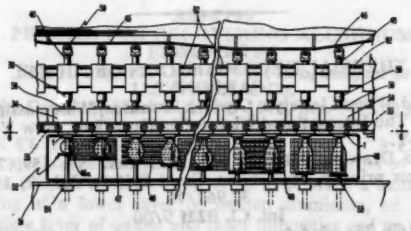


The invention relates to a method of making abrasive tools which is characterized in that the spaces of the blank filled with abrasive filler are tightly closed and the blank is placed into a chamber with a shaping hole after which said chamber is filled with a fluid medium, and a pressure is built up in said medium for extruding the blank through the shaping hole.

3,694,178
SHAPING HOLLOW GLASS BODIES BY PLURALITY OF JETS

Francois Maurice Hennequin, Le Vesinet, France, assignor to Compagnie de Saint-Gobain, Neuilly-sur-Seine, France

Filed Dec. 17, 1969, Ser. No. 885,935
Claims priority, application France, Dec. 17, 1968, 128,618; June 18, 1969, 6920315
Int. Cl. C03b *9/00, 21/00*
U.S. Cl. 65—84 **20 Claims**



Thermoplastic material such as glass is shaped as a paste or parison having an entry for blowing. It is internally blown while its outer surface is shaped by successive effects of local gaseous counterpressures accompanied by heat.

3,694,179
METHOD FOR PRODUCING PHOSPHATE OPTICAL GLASSES

Emil W. Deeg and Robert W. Young, Woodstock, Conn., assignors to American Optical Corporation, Southbridge, Mass.

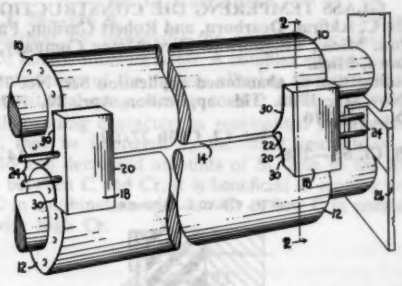
No Drawing. Filed Mar. 3, 1971, Ser. No. 120,779
Int. Cl. C03b *5/08*
U.S. Cl. 65—136 **5 Claims**

Phosphate glasses for optical applications are produced by an improved method in which the ceramic utensils utilized in the production of the glass are formed of tin oxide.

3,694,180
GLASS ROLLING APPARATUS AND METHOD

Henry M. Demarest, Jr., Natrona Heights, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 796,713, Feb. 5, 1969. This application Apr. 15, 1971, Ser. No. 134,161
Int. Cl. C03b *13/16*
U.S. Cl. 65—101 **10 Claims**



A shaping member or gun for controlling the width of a rolled glass ribbon is constructed of a refractory material which will operate at temperatures on the order of about 2800 degrees Fahrenheit to 2900 degrees Fahrenheit, such as refractories containing high alumina or high silica. The use of such a gun for the rolling of a high-temperature glass, vitrifying at about 2800 degrees to 2900 degrees Fahrenheit, is considered essential for the practical rolling of such glass.

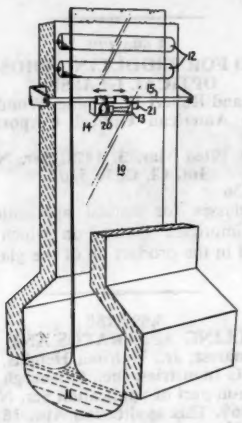
3,694,181
APPARATUS FOR CONTROLLING GLASS FRACTURES

Terrence A. Dear, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of abandoned application Ser. No. 779,730, Nov. 29, 1968. This application June 1, 1971, Ser. No. 149,019
Int. Cl. C03b *29/00*
U.S. Cl. 65—158 **4 Claims**

This invention relates to apparatus for arresting a developing fracture in a ribbon of glass by the application of heat of about 950° F. to the area of the fracture and inducing temporary thermal stresses which place the glass in compression, thus arresting and eventually controlling the fracture. The apparatus comprises a crack-sensing device, a control means and a high-intensity heat source which are mounted so as to scan continuously the moving ribbon, and with the heat source being activated in re-

sponse to the presence of a developing crack. Circuits may be used to move the heat source across the width of



the glass ribbon to direct the fracture toward an edge of the ribbon.

3,694,182

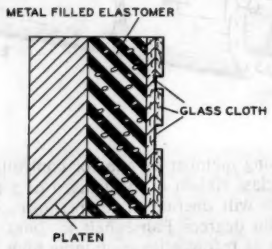
GLASS TEMPERING DIE CONSTRUCTION

John C. Akfirat, Dearborn, and Robert Gardon, Farmington, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of abandoned application Ser. No. 777,883, Nov. 21, 1968. This application Apr. 20, 1971, Ser. No. 135,770

Int. Cl. C03b *27/00*

U.S. Cl. 65—288 14 Claims



A die used for a glass tempering apparatus in which the die is brought into contact with the glass to be tempered has at least the following structural components. A rigid supporting platen forms a portion of the glass tempering apparatus. This platen has a layer of metal-filled, relatively deformable elastomeric material secured thereto. A thin glass cloth fabric covers the surface of the elastomeric material which is brought into contact with the glass during the tempering operation.

3,694,183

PROCESS FOR CORRECTING IRON CHLOROSIS IN PLANTS

Kenneth Russell Gray, Shelton, Wash., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

No Drawing. Continuation of application Ser. No. 71,630, Sept. 11, 1970. This application Dec. 6, 1971, Ser. No. 205,305

Int. Cl. C05 *9/02*

U.S. Cl. 71—1 6 Claims

Processes are provided for the correction of iron chlorosis in plants. These processes comprise treating the plants with iron complexed red cedar wood extracts from the group consisting of potassium plicatate-iron complexes, complexes, sodium plicatate-iron complexes and mixtures thereof.

3,694,184

BIS-(POLYHALOHYDROCARBYL) TRISULFIDES AS ALGICIDES

Gustave K. Kohn, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Original application Nov. 29, 1968, Ser. No. 780,292, now Patent No. 3,574,767, dated Apr. 13, 1971. Divided and this application Sept. 8, 1970, Ser. No. 73,607

Int. Cl. A01h *11/00;* A01n *9/12*

U.S. Cl. 71—67 2 Claims

Bis-(tetrahaloethyl) trisulfides and bis-(trihalovinyl) trisulfides. These trisulfides are prepared by reacting tetrahaloethylsulfenyl chloride or trihalovinylsulfenyl chloride, respectively, with hydrogen sulfide. The tetrahaloethyl compounds are useful as seed disinfectants; whereas the trihalovinyl materials are algicidal.

3,694,185

PRODUCTION OF METAL POWDER BY DIRECT REDUCTION FROM AQUEOUS SOLUTIONS

Wasyl Kunda, Fort Saskatchewan, Alberta, and Finlay Campbell, Edmonton, Alberta, Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada

Filed May 28, 1971, Ser. No. 147,888

Int. Cl. B22f *9/00*

U.S. Cl. 75—.5 A 5 Claims

In the production of copper, cobalt and nickel by gas reduction from solutions or slurries in which the metal is present as a salt, a very small amount, e.g. between 0.01 and 0.005 gram per litre, of ethylene maleic anhydride is provided in the reduction charge to control the physical characteristics, particularly surface texture, of the powder product.

3,694,186

THERMAL DECOMPOSITION OF NICKEL CARBONYL

David Myers Llewelyn, Clydach, Swansea, Wales, assignor to The International Nickel Company, Inc., New York, N.Y.

No Drawing. Filed July 2, 1971, Ser. No. 159,471

Claims priority, application Great Britain, July 7, 1970, 32,961/70

Int. Cl. B22f *9/00*

U.S. Cl. 75—.5 AA 7 Claims

The carbon content of nickel formed by the thermal decomposition of nickel carbonyl is reduced by carrying out the decomposition in the presence of nitrous oxide (N_2O), advantageously at 260° C. or above. Advanta-

geously a decomposer with nitrided steel walls is used. The presence of N_2O during the decomposition of nickel carbonyl also inhibits the contamination of the nickel produced with iron.

3,694,187
PRODUCTION OF CARBONYL IRON
David Myers Llewelyn, Clydach, Swansea, Wales, assignor to The International Nickel Company, Inc., New York, N.Y.
No Drawing. Filed July 2, 1971, Ser. No. 159,472
Claims priority, application United Kingdom, July 7, 1970, 32,962/70
Int. Cl. B22f *9/00*
U.S. Cl. 75—.5 AA 12 Claims

Thermal decomposition of iron carbonyl vapour to carbonyl iron powder is catalysed by carrying out the decomposition in the presence of nitric oxide (NO), nitrogen trioxide (N_2O_3) or nitrogen peroxide (NO_2). The presence of these gases also enables the carbon content of powder of a given particle size to be reduced.

3,694,188
THERMAL DECOMPOSITION OF IRON CARBONYL
David Myers Llewelyn, Clydach, Swansea, Wales, assignor to The International Nickel Company, Inc., New York, N.Y.
No Drawing. Filed July 2, 1971, Ser. No. 159,474
Claims priority, application Great Britain, July 7, 1970, 32,960/70
Int. Cl. B22f *9/00*
U.S. Cl. 75—.5 AA 10 Claims

The carbon content of iron powder formed by the thermal decomposition of iron carbonyl is lowered and the rate of conversion of iron carbonyl to carbonyl iron is increased by carrying out the reaction at a temperature of at least about 270° C. in the presence of nitrous oxide (N_2O).

3,694,189
REDUCTION PROCESS FOR REMOVING IRON FROM SPODUMENE
Charles A. Salotti, 660 Riverhill Drive, Athens, Ga. 30601
No Drawing. Filed Oct. 20, 1969, Ser. No. 867,923
Int. Cl. C22b *27/00*; C01d *11/02*
U.S. Cl. 75—21 3 Claims

The process for purifying spodumene by removing iron from the crystal structure comprising heating the spodumene to a temperature in a predetermined range in the presence of a reducing gas under pressure for a predetermined time period so as to convert the iron to its elemental form, in which form it can readily be mechanically, magnetically, or chemically separated from the purified spodumene.

3,694,190
PROCESS FOR RECOVERING ALUMINUM FROM DROSS
Benny Langston, Crown Point, Ind., assignor to U.S. Reduction Co.
No Drawing. Filed Mar. 18, 1970, Ser. No. 20,804
Int. Cl. C22b *7/00, 21/00*
U.S. Cl. 75—68 R 3 Claims

A method of reclaiming aluminum from dross by heating a mixture of a flux and dross to produce a bath consisting of a lower layer of molten aluminum, an intermediate layer of oxides and other impurities and an upper layer of raw materials and withdrawing the intermediate layer of oxides and other impurities at the interface between the aluminum layer and the intermediate layers so as to remove higher density materials and prevent the formation of a barrier between the upper and lower layers.

3,694,191
PROCESS FOR DE-COPPERIZING LEAD
Yurii E. Lebedeff, Edison, and William C. Klein, Menlo Park, N.J., assignors to American Smelting and Refining Company, New York, N.Y.
Filed Sept. 11, 1970, Ser. No. 71,603
Int. Cl. C22b *13/06*
U.S. Cl. 75—78 1 Claim

Lead containing a residual small amount of copper is de-copperized by a process involving adding caustic alkali to the copper-containing molten lead, adding pyrite to the copper-containing molten lead, the pyrite being added in an amount sufficient to substantially remove the copper from the lead, and mixing the pyrite and the caustic alkali with the copper-containing molten lead. The pyrite and caustic alkali are maintained mixed with the copper-containing molten lead at least until the pyrite reacts with the copper to form a sulfur compound or compounds of copper. Subsequently a dross containing the sulfur compound of copper is separated from the thus-obtained molten lead of reduced copper content.

3,694,192
FERRITIC STAINLESS STEELS WITH IMPROVED COLD-HEADING CHARACTERISTICS
Kenneth G. Brickner, O'Hara Township, Allegheny County, Pa., assignor to United States Steel Corporation
Filed Aug. 11, 1970, Ser. No. 62,977
Int. Cl. C22c *39/14*
U.S. Cl. 75—126 B 13 Claims

A method for improving the cold-heading characteristics of ferritic stainless steels. A complex equation shows the interrelation of the various alloying elements. Within a compositional range similar to that of Type 430 steel, the cold-heading character, as represented by lowered $\bar{n}$ values, may be improved by increased amounts of Mn and Mo and decreased amounts of Si. Due to the interaction between C and Cr, it is beneficial to employ either high C in combination with low Cr or low C in combination with high Cr.

3,694,193
METHOD OF MANUFACTURING LAMELLAR COMPOSITES
Franciscus Marinus Anna Carpay and Adrianus Martinus Jacobus Gerardus van Run, both of Emmasingel, Eindhoven, Netherlands
No Drawing. Filed Oct. 6, 1970, Ser. No. 78,575
Claims priority, application Netherlands, Aug. 15, 1970, 7012088
Int. Cl. C22c *33/00, 1/02*
U.S. Cl. 75—129 2 Claims

A method of manufacturing lamellar composites by means of directionally demixing solid materials having a eutectoid composition, or solid solutions. The starting materials must have a grain size of more than approximately 0.1 mm. The materials are directionally demixed while using a temperature gradient of at least 10° C. per cm. which is passed through the body at a rate which is less than or equal to the maximum demixing rate.

3,694,194
METHOD FOR THE MANUFACTURE OF CENTRIFUGAL CASTINGS
Milorad Mirjanic, Fellbach, Wurttemberg, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Sept. 15, 1969, Ser. No. 857,815
Claims priority, application Germany, Sept. 14, 1968, P 17 83 002.3
Int. Cl. B22d *13/02*; C22c *37/00*
U.S. Cl. 75—130 R 6 Claims

A method for the manufacture of centrifugal castings in which the melt contains more than 4 percent by weight of carbon and the casting takes place at increased temperatures and/or centrifugal velocities.

3,694,195

HEAT-RESISTANT ALUMINUM ALLOYS FOR ELECTRIC CONDUCTORS

Minoru Yokota, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

No Drawing. Filed Oct. 16, 1970, Ser. No. 81,550
Int. Cl. C22c *21/00*
U.S. Cl. 75—138 5 Claims

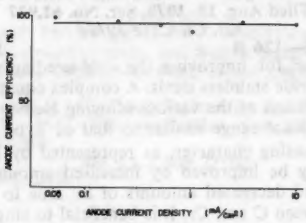
A heat-resistant aluminum alloy for electrical conductors which consists of 0.01 to 0.5% (by weight, as now and hereinafter referred to) zirconium, 0.0005 to 0.08% yttrium and/or 0.0003 to 0.08% erbium and the balance of which is essentially aluminum.

3,694,196

ALUMINUM ALLOY FOR GALVANIC ANODE

Kazuo Toda and Tosuke Murai, Urawa, and Chikatoshi Miura and Yuichi Tamura, Tokyo, Japan, assignors to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha and Nihon Boshoku Kogy Kabushiki Kaisha, both of Tokyo-to, Japan

Filed Oct. 4, 1971, Ser. No. 186,218
Claims priority, application Japan, Oct. 7, 1970, 45/87,521
Int. Cl. C22c *21/00*
U.S. Cl. 75—146 15 Claims



Aluminum alloy for galvanic anode having improved anode potential and anode current efficiency which consists of aluminum base and specific quantities of zinc, tin, bismuth, gallium capable of imparting to the base aluminum these required galvanic anode characteristics.

3,694,197

ELECTRICAL CONTACT MATERIALS OF SILVER-CADMIUM OXIDE CONTAINING ADDITIVES

Edward J. Zdanuk, Burlington, Richard H. Krock, Weston, and Yuan Shou Shen, Reading, Mass., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Nov. 12, 1970, Ser. No. 88,620
Int. Cl. C22c *5/00*
U.S. Cl. 75—173 R 44 Claims

Improved properties including reduced arc erosion rate are obtained in silver-cadmium oxide alloys by adding at least one additive selected from the group consisting of beryllium, cerium, scandium, antimonyl, gallium, indium, strontium, yttrium and thallium metals in an amount from 0.001 up to 5%, and optionally tin.

3,694,198

SILVER-CADMIUM OXIDE ALLOYS HAVING PERIODIC PRECIPITATION

Richard H. Krock, Weston, Yuan Shou Shen, Reading, and Edward J. Zdanuk, Burlington, Mass., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Feb. 19, 1971, Ser. No. 116,820
Int. Cl. C22c *5/00*
U.S. Cl. 75—173 R 27 Claims

In accordance with the present invention, it has been found that if at least one additive selected from the group consisting of beryllium, magnesium, aluminum, scandium, yttrium, lanthanum and neodymium is added to a silver cadmium alloy in an amount from about 0.005 to about 1 weight percent, precipitation of the cadmium oxide occurs in layers which are parallel to the oxidation front. This results in directional properties being achieved in the material, including electrical conductivity and mechanical properties.

3,694,199

METHOD OF PRODUCING ZINC ALLOY

Robert Francis Redden, Fruitvale, British Columbia, Canada, assignor to Cominco Ltd., Montreal, Quebec, Canada

Filed Aug. 17, 1970, Ser. No. 64,459
Claims priority, application Canada, July 27, 1970, 089,184
Int. Cl. C22c *17/00*
U.S. Cl. 75—178 C 6 Claims

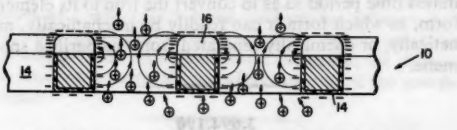
A method of preparing a zinc-base alloy containing copper and titanium or copper, titanium and manganese, substantially free of idiomorphic crystals of zinc-titanium intermetallic compounds, in which a master alloy is formed in molten form in a first vessel and said master alloy added to molten zinc in a second vessel to form the final desired alloy composition, said master alloy and final alloy being continuously agitated during their respective formations.

3,694,200

ELECTROSTATIC MODULATOR FOR CONTROLLING FLOW OF CHARGED PARTICLES

Gerald L. Pressman, San Jose, Calif., assignor to Electroprint, Inc., Palo Alto, Calif.

Filed Oct. 29, 1970, Ser. No. 85,070
Int. Cl. G03g *5/00, 13/00*
U.S. Cl. 96—1 R 8 Claims



A system for controlling the flow of charged particles and for modulated aperture electrostatic printing. An apertured screen having substantially the entire surfaces formed of a dielectric material is charged with like charges over substantially all its surfaces to develop fringing fields in the apertures. The charge distributed across one side of the screen is selectively dissipated in accordance with a pattern to be reproduced thereby establishing a bipolar electrostatic latent image as a modification of the fringing fields for density control of a flow of charged particles directed through the screen. The screen may be formed with dielectric thicker on one face than the other to initially carry a higher potential and provide a uniform charge inequality or potential difference through the screen aper-

tures, oriented to enhance the flow of charged particles through the screen. Full modulation control of particle flow is therefore possible with a single selective charge dissipation. For electrostatic reproduction a print-receiving medium is interposed in the modulated particle flow passing through the screen.

3,694,201

METHOD FOR PHOTOCONDUCTIVE POWDER

Arthur J. Behringer, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 6, 1971, Ser. No. 104,335
Int. Cl. G03g 5/08
U.S. Cl. 96—1.5 5 Claims

Method of preparing copper-chlorine activated cadmium sulfide, cadmium selenide or cadmium sulfoselenide with a small percentage of cadmium chloride or zinc chloride to inhibit grain growth.

3,694,202

PAPER CONTAINING ELECTROCONDUCTIVE PIGMENT AND USE THEREOF

Edgar W. Sawyer, Jr., 22 Nottingham Road, Edison, N.J. 08817, and Frank J. Dzierzanowski, 2 Norfolk Road, Somerset, N.J. 08873

No Drawing. Filed June 5, 1970, Ser. No. 43,951
Int. Cl. G03g 7/00; D21h 3/66
U.S. Cl. 96—1.8 8 Claims

The conductivity of paper is increased by incorporating a conductive zeolitic aluminosilicate with the paper as a coating or as a filler. The resulting paper is useful in various nonimpact printing processes. For example, when provided with a surface coating of photosensitive material such as zinc oxide, the paper is employed in direct electrophotographic copying.

3,694,203

REPRODUCTION PROCESS BY POWDER DEVELOPMENT AND FIXATION OF TRANSFERRED IMAGE

Kinji Okubo, 210 Nakanuma, Minami-Ashigara Machi, Ashigara-Kamigun, Kanagawa, Japan, and Toshihiko Nagai, deceased, late of Tokyo, Japan, by Kenichi Nagai, legal representative, 5–10, 4-chome, Yakumo, Megro-ku, Tokyo, Japan

No Drawing. Original application Feb. 10, 1966, Ser. No. 529,909, now Patent No. 3,539,342. Divided and this application Apr. 2, 1970, Ser. No. 29,357
Claims priority, application Japan, Feb. 10, 1965, 40/7,155
Int. Cl. G03c 5/04
U.S. Cl. 96—27 3 Claims

A process for the producing of a number of reproductions on ordinary paper. The reproduction process comprises exposing an intermediate sheet coated with a light-sensitive or heat sensitive material to radiation to form a metastable liquid when its melt is cooled on the intermediate sheet in areas corresponding to the location of the images on the original sheet, transferring a part of the image onto a receiving sheet, and then subjecting the transferred image to powder development and fixation.

3,694,204

DIFFUSION TRANSFER PRODUCT HAVING HEAT ACTIVATABLE PROCESSING SYSTEM AND AN OPACITY PROVIDING LAYER

Leonard C. Farney, Melrose, and Carole L. Groncki, Lynnfield, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 28, 1970, Ser. No. 101,630
Int. Cl. G03c 5/54
U.S. Cl. 96—29 R 25 Claims

Photographic products for providing diffusion transfer image patterns and having the capability of being developed by heat. Essential elements of the preferred products of the present invention are a heat activatable processing system integrated with a pellucid, diffusion transfer image pattern receiving layer, a layer comprising an opacification system which can provide a reflective background for viewing the diffusion transfer image pattern and at the same time effectively mask a developed image pattern in an underlying layer comprising a photosensitive system.

3,694,205

PHOTOGRAPHIC METHOD OF DESIGN SYNTHESIS AND EVALUATION

Thomas F. Richardson, Jr., 45 Summit Road, Riverside, Conn. 06878

Filed May 28, 1970, Ser. No. 41,468
Int. Cl. G03c 5/04
U.S. Cl. 96—27 R 9 Claims

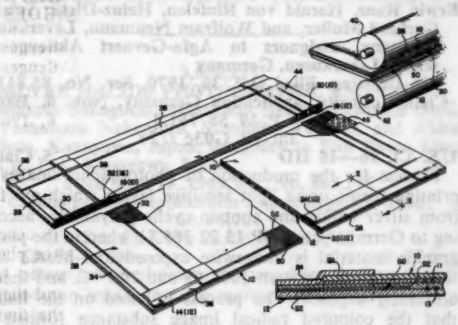
A direct method of producing photographic representations of surface ornamentation on physical objects in which the image of a proposed pattern of ornamentation is projected onto the surface of each object, and then photographically recorded as it appears thereon for a permanent record. The projected image may come fom a single projector or be synthesized from images from several projectors. The patterns may be widely vaied for purposes of evaluation by changing the focus, color, pattern, position, size, etc. of the projected images. The permanent record is made either by directly photographing each object or by covering each object with emulsion and exposing it to the projected image.

3,694,206

PHOTOGRAPHIC FILM UNIT

Rogers B. Downey, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 29, 1970, Ser. No. 102,447
Int. Cl. G03c 5/54
U.S. Cl. 96—29 R 27 Claims



A self-developing, photographic film unit including a pair of rectangular support sheets, one of which is transparent, secured in face-to-face relation at their lateral margins and at one end by binding strips. The margins of the transparent support sheet extend beyond the edges of the other sheet and the binding strips are secured to and overlap the lateral margins and one end margin of both sheets. A photosensitive image-recording layer and an image-receptive layer are sandwiched between the sheets, preferably with the image-receptive layer closest the transparent sheet. A container of a liquid processing agent adapted to initiate formation of a visible transfer image in the image-receptive layer when distributed between the sheets for permeation into the photosensitive layer following exposure thereof, is coupled to the sheets at the other end edge of the smaller sheet so as to dispense its liquid contents between the sheets in response to the ap-

plication of compressive pressure. A masking layer including a reflective pigment carried in a binder is coated or the side of the transparent sheet facing the smaller sheet and extends to the edges of the transparent sheet. The masking layer is formed with a rectangular opening smaller than the smaller sheet and is located between the photosensitive and image-recording layers or between the latter and the transparent sheet to provide a reflective border surrounding the visible image formed in the image-recording layer. The sheets and layers of the film unit may be laminated to one another to form an integral unit or the two support sheets and the layers carried thereon may be secured to one another only at their margins.

3,694,207

TREATMENT OF IMAGEWISE EXPOSED CATALASE ACTIVE OR PEROXIDASE ACTIVE ENZYME CONTAINING LAYER WITH PEROXIDE

Reinhart Matejec and Erwin Ranz, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 26, 1970, Ser. No. 84,195
Claims priority, application Germany, Nov. 6, 1969, P 19 55 901.4
Int. Cl. G03c *5/24*
U.S. Cl. 96—48 **6 Claims**

For the production of positive photographic images are used layers containing catalase active and/or peroxidase active enzymes, which are inactivated on exposure to light, thus becoming incapable of decomposing peroxide compounds. The peroxide compounds are used either to form an image of gas bubbles in the layer or to produce a dye image by a color-forming oxidation reaction. The sensitivity can largely be increased by substances which on exposure to light liberate halogen or cyanide, which latter products act as poisons for the enzymes.

3,694,208

PRODUCTION OF PHOTOGRAPHIC IMAGES OR PRINTING PLATES UTILIZING POLYIMIDES

Erwin Ranz, Harald von Rintelen, Heinz-Dieter Schutz, Gerhard Muller, and Wolfram Neumann, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 30, 1970, Ser. No. 85,811
Claims priority, application Germany, Nov. 6, 1969, P 19 55 751.8
Int. Cl. G03c *3/24*
U.S. Cl. 96—48 HD **5 Claims**

Process for the production of photographic images or printing forms using light sensitive layers which are free from silver halide and contain cyclic polyamides according to German patent (P 15 22 385.5) wherein the photographic material is imagewise exposed and heated to a temperature of between 100° C. and 200° C. and then is uniformly exposed. The process is based on the finding that the coloured radical image substance formed by imagewise exposure is irreversibly converted into colourless or almost colourless compounds by heating them to 100° C. to 200° C.

3,694,209

PROCESS FOR THE DEVELOPMENT OF EXPOSED PHOTOGRAPHIC MATERIAL CONTAINING SILVER HALIDE

Georg Schwienbacher, Zurich, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Mar. 9, 1970, Ser. No. 17,967
Claims priority, application Switzerland, Mar. 14, 1969, 3,879/69
Int. Cl. G03c *5/26*
U.S. Cl. 96—50 **8 Claims**

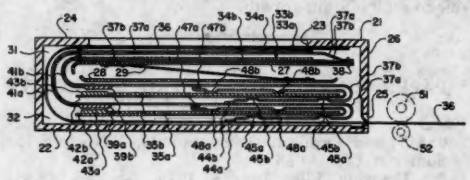
A process for rapid developing of exposed photographic silver halide material, especially X-ray fibers is provided. The process consists in first treating the material with a strong alkali metal hydroxide solution and then with the developer solution and afterwards carrying out the processing steps required for finishing the photograph. The developing bath may be followed by a second alkaline bath. This process makes it possible to obtain stable immediately visible picture shortly, e.g. 14 seconds, after exposure.

3,694,210

PHOTOGRAPHIC FILM ASSEMBLAGE

Hubert Nerwin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 27, 1970, Ser. No. 93,196
Int. Cl. G03c *1/48*
U.S. Cl. 96—76 C **5 Claims**



An assemblage of self-processing photographic film units initially arranged in stacked relation with interleaved transporting and connecting leaders. Certain of the leaders initially are releasably bonded or tacked to portions of their respective film units so that the withdrawal of such leaders develops a moving transverse fold in the leader that moves longitudinally in a smooth and predictable fashion to prevent jamming or binding.

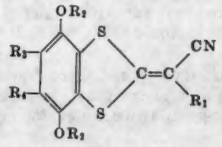
3,694,211

ORGANIC MATERIALS CONTAINING UV-ABSORBERS

Shui Sato, Tomio Nakajima, Masashi Nakano, Ken-ichi Kishi, Tokyo, and Sadao Sugita, Hanno, Japan, assignors to Konishiroku Photo Industry Co., Ltd.

No Drawing. Filed Apr. 13, 1971, Ser. No. 133,703
Claims priority, application Japan, Apr. 17, 1970, 45/32,370
Int. Cl. F21v *9/06*; C07d *71/00*
U.S. Cl. 96—84 **3 Claims**

The compounds used in the present invention are represented by the general formula,



wherein R_1 is a nitrile, alkoxycarbonyl or carbamoyl group; R_2 is a hydrogen atom or a substituted or unsubstituted and saturated or unsaturated aliphatic group; and R_3 and R_4 are individually a hydrogen atom or an alkyl or alkoxyl group.

A compound of the general formula is used as an ultraviolet light absorber in organic materials such as shaped synthetic resin materials, synthetic and natural fiber materials, oils, paints, printing inks and photographic materials.

3,694,212

FILM SUPPORT COATED WITH POLYESTER AND GELATIN-SILVER HALIDE EMULSION

Lothar Richter, Seelenbinderstrasse 138, and Georg Eichhorn, Hoernle Strasse 3, both of Berlin-Kopenick, Germany

No Drawing. Continuation of application Ser. No. 630,840, Apr. 14, 1967. This application Aug. 3, 1970, Ser. No. 60,632

Int. Cl. G03c *1/80*

U.S. Cl. 96—87 R 3 Claims

An article comprising a cellulose ester- or polyethylene terephthalate-based substrate, overlying and in contact with the substrate an adhesive coating consisting of the reaction product of glycerine with an aliphatic or aromatic dicarboxylic acid or acid anhydride containing up to 10 carbon atoms in its molecule in molar proportions of the glycerine to the dicarboxylic acid or acid anhydride of about 1:2, and overlying and in contact with the adhesive coating a coating of a photographic emulsion.

3,694,213

Patent Not Issued For This Number

3,694,214

LIGHT-SENSITIVE COLOR-PHOTOGRAPHIC EMULSIONS

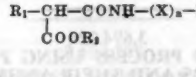
Masakumi Iwama, Isaburo Inoue, Teruo Hanzawa, Kenro Sakamoto, and Takaya Endo, Tokyo, Japan, assignors to Komishiroku Photo Industry Co., Ltd.

No Drawing. Continuation-in-part of abandoned application Ser. No. 778,774, Nov. 25, 1968. This application Oct. 14, 1970, Ser. No. 80,749

Int. Cl. G03c *1/40*

U.S. Cl. 96—100 7 Claims

A light-sensitive color photographic silver halide emulsion which comprises a coupler of the general formula



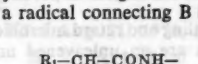
wherein

R_1 represents an aliphatic hydrocarbon radical having 8–20 carbon atoms,

R_2 represents hydrogen or a lower alkyl group,

B represents yellow or magenta coupler residue,

X represents a radical connecting B and



n is 0 or 1.

3,694,215

LIQUID SHORTENING CONTAINING BRASSIDOYL PROPYLENE GLYCOL HYDROGEN SUCCINATE

Paul Seiden, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Dec. 29, 1970, Ser. No. 102,525

Int. Cl. A23d *5/00*

U.S. Cl. 99—118 F 8 Claims

The novel compound brassidoyl propylene glycol hydrogen succinate (BSPGHS) having use as a shortening composition additive is produced. A novel liquid shortening composition is also produced by mixing a glyceride base oil, BSPGHS, propylene glycol fatty monoester and mono- and diglycerides, desmoking the mixture and winterizing the desmoked mixture. The shortening composition is clear at temperatures above 60° F., pourable at refrigerator temperatures, rapidly recovers its clarity when removed from refrigerator temperatures to temperatures above 60° F., has minimal smoking tendencies, and possesses excellent cake baking properties.

3,694,216

SILVER HALIDE EMULSIONS CONTAINING METHINE DYES WITH 1H,5H-PYRAZOLO-[1,2-a]PYRAZOLE - 1,3(2H),5,7(6H) - TETRONE NUCLEUS

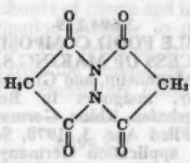
Philip W. Jenkins, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed June 29, 1970, Ser. No. 50,988

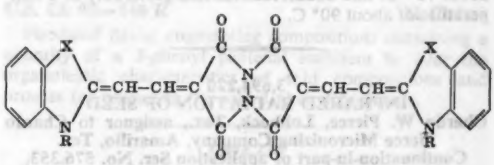
Int. Cl. G03c *1/10, 1/22*

U.S. Cl. 96—128 7 Claims

The novel compound 1H,5H-pyrazolo[1,2-a]pyrazole-1,3(2H),5,7(6H)-tetrone



can be prepared by the reaction of hydrazine dihydrochloride with a dialkyl malonate in the presence of sodium alkoxide and is useful as an intermediate for novel dyes including merocyanine dyes such as



wherein R is alkyl and X is O, S, NH, Se or the like, the dyes being useful as photographic spectral sensitizing dyes or filter dyes.

3,694,217

SILVER HALIDE PHOTOGRAPHIC EMULSION

Yoshikata Sakaguchi, Masakado Sakai, Masanaga Ohki, Yashuharu Nakamura, Motohiko Tsubota, and Akira Sato, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

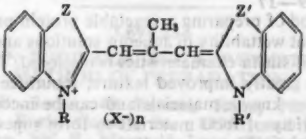
Filed Sept. 12, 1969, Ser. No. 865,545

Claims priority, application Japan, Sept. 12, 1968, 43/65,704

Int. Cl. C09b *23/06;* G03c *1/18*

U.S. Cl. 96—130 9 Claims

A silver halide photographic emulsion having therein at least one sensitizing dye represented by the following formula:



wherein Z and Z′ are individually selected from the group consisting of a sulfur and a selenium atom, R is selected from the group consisting of an ethyl group, an n-propyl group, an n-butyl group and an allyl group, R′ is selected from the group consisting of a γ-sulfopropyl group, a γ-sulfobutyl group, a δ-sulfobutyl group, a δ-carboxybutyl group and an ω-carboxypentyl group, X represents an anion, and *n* is 0 or 1, *n* being 0 when the dye is an intramolecular salt.

3,694,218

METHOD OF HOLOGRAM RECORDING

John D. Margerum, Woodland Hills, and Alexander D. Jacobson, Los Angeles, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

No Drawing. Filed Mar. 3, 1970, Ser. No. 16,210
Int. Cl. G03c 5/00
U.S. Cl. 96—35.1 4 Claims

Method of holographic photopolymer recording by an optical system of the interference pattern between wavefronts emanating from an object illuminated with laser radiation and a coherent reference wavefront.

3,694,219

SPREADABLE FOOD COMPOSITION AND PROCESS OF MAKING SAME

Kaete Glandorf, Mannheim, and Guenter Scheurer, Hassloch, Germany, assignors to Benckiser-Knapsack GmbH, Ludwigshafen, Rhine, Germany

No Drawing. Filed Apr. 3, 1970, Ser. No. 25,560
Claims priority, application Germany, Apr. 5, 1969, P 19 17 687.5
Int. Cl. A23c 19/12; A23l 1/00
U.S. Cl. 99—1 12 Claims

A spreadable food composition is obtained by subjecting soybean flour, if desired, with the addition of rennet casein or ripened cheese in the presence of processing salts to a short time heat treatment at a temperature between about 75° C. and about 105° C. and preferably at a temperature of about 90° C.

3,694,220

INFRARED RADIATION OF SEED

Chardo W. Pierce, Lubbock, Tex., assignor to Chardo Pierce Micronizing Company, Amarillo, Tex.

Continuation-in-part of application Ser. No. 576,353, Aug. 31, 1966. This application Sept. 2, 1969, Ser. No. 854,693
Int. Cl. A23k 1/00; A23l 1/18
U.S. Cl. 99—2 8 Claims

Seeds from grain or legumes are prepared for animal or human consumption by first heating with infrared radiation until soft, turgid, malleable and plastic. Then the seed are extruded by a roll to form a wafer or flake from each seed, which wafer or flake is suitable for storage and is readily digestible.

3,694,221

ENZYME MODIFIED PROTEIN PROCESS

Ralph A. Hoer, Ballwin, Christopher W. Frederiksen, St. Louis, and Robert L. Hawley, Webster Groves, Mo., assignors to Ralston Purina Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 625,980, Mar. 27, 1967. This application Jan. 30, 1970, Ser. No. 7,224
Int. Cl. A23j 1/14
U.S. Cl. 99—17 44 Claims

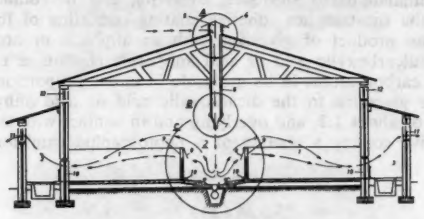
A method of preparing a vegetable protein product having excellent wettability in aqueous solutions and improved drop in and stir in characteristics is disclosed. The product exhibits a greatly improved texture, mouthfeel, and wettability over known materials and can be incorporated in a wide variety of food materials to form superior protein fortified foods. The process involves subjecting aqueous protein material to a rapid heating and physical working step, such as by steam injection, reacting the protein in the presence of a proteolytic enzyme for a short time to hydrolyze and modify the protein, and heating the protein to inactivate the enzyme and stop the reaction. The aqueous protein can be dried and a dry, powdered protein product is recovered which is highly dispersible in water, has high drop in and stir in characteristics, and which has excellent smooth texture and mouthfeel.

3,694,222

APPARATUS FOR AERATING CATTLE SHEDS, PARTICULARLY PIGSTIES

Machiel Pardoel, Vlerdseweg E 211, Bruchem, Netherlands, and Lodewijk Oosterveen, Teisterbandstraat 48–B, Kerkdriel, Netherlands

Continuation of abandoned application Ser. No. 725,718, May 1, 1968. This application Feb. 5, 1971, Ser. No. 113,051
Int. Cl. F24f 13/06
U.S. Cl. 98—33 R 2 Claims



A method and apparatus for aerating a cattle shed wherein fresh air is drawn into the shed from an inlet above the floor, conducted downwardly from the inlet through a conduit and accelerated at a distance above the floor, and drawn across the floor at a desired level thereabove toward an outlet in a sidewall of the shed. A constricted passage at the lower end of the conduit effects acceleration of the fresh air as it is drawn therethrough toward the floor, and three species of the apparatus embody alternative inlet constructions and locations therefor.

3,694,223

Patent Not Issued For This Number

3,694,224

TORTILLA AND PROCESS USING POLYCARBOXYLIC ACIDS AND THEIR ANHYDRIDES

Manuel Jesus Rubio, Bridgeport, Conn., assignor to Roberto Gonzalez Barrera, Monterrey, Mexico

No Drawing. Filed July 24, 1970, Ser. No. 58,139
Int. Cl. A23l 1/10, 1/00
U.S. Cl. 99—80 R 18 Claims

To retard the staling and retard microbiological spoilage of tortillas, which are an unleavened unshortened food product made from nixtamalized corn or corn flour by incorporating an additive in making the tortilla dough. The additive is an aliphatic polycarboxylic acid or its anhydride having 3 to 6 carbon atoms in its carbon chain.

3,694,225

Patent Not Issued For This Number

3,694,226

QUICK-COOKING RICE PRODUCT AND PROCESS FOR PREPARING SAME

Robert F. Howland, Dover, Joseph B. Haigh II, Milford, and Robert W. Fusi, Dover, Del., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed June 11, 1968, Ser. No. 736,020
Int. Cl. A23l 1/10
U.S. Cl. 99—80 PS 5 Claims

A quick-cooking rice product is prepared by gelatinizing the rice in stages, controlling the increase in moisture content of the rice during each stage, and drying the rice under conditions whereby a desired bulk volume of the product is attained.

3,694,227

METHOD FOR MAKING DOUGH

Pompeo Vezzani, Via Moncalvo 60, Milan, Italy

Filed Mar. 11, 1970, Ser. No. 18,588

Claims priority, application Italy, Mar. 15, 1969, 51,012/69; June 30, 1969, 52,441/69; Oct. 14, 1969, 23,319/69; Feb. 17, 1970, 67,523/70; Feb. 18, 1970, 67,537/70, 67,538/70

Int. Cl. A21d *8/00*

U.S. Cl. 99—90 CB 7 Claims

Dough for bread products and "pasta" is continuously produced within 1 minute or less by contacting together the powdery and liquid ingredients in dispersed condition in the inlet section of a tubular continuous mixer and rotating the bladed shaft of the latter at a centrifuging speed thereby to form and maintain in the mixer a tubular liner of dough being furrowed by the tips of the blades. The speed of the shaft advantageously corresponds to a radial acceleration of 40G to 80G at the tips of the blades, G being the constant of gravity.

3,694,228

FRIED CAKE MIX COMPOSITION

Arthur Hochhauser, Brooklyn, and Frank Clark, New York, N.Y., assignors to DCA Food Industries, Inc., New York, N.Y.

No Drawing. Filed May 5, 1970, Ser. No. 34,890

Int. Cl. A21d *13/08, 2/28*

U.S. Cl. 99—92 15 Claims

A coreless fried cake or doughnut product having a specific volume greater than 4.0 cc./gram is formed from a novel mix composition comprising 10–12 wt. percent total proteins of which 50 to 70% are gluten proteins and the balance are dispersible proteins. The composition also includes minor amounts of a sulfhydryl reducing agent and a fatty acid ester of sorbitol as an emulsifier.

3,694,229

PROCESS FOR PREPARING DRY LAYER CAKE MIX AND THE RESULTING PRODUCT

Norrain E. Norsby, Hopkins, and Robert F. Kozlik and John R. Roach, Minneapolis, Minn., assignors to General Mills, Inc.

No Drawing. Filed Aug. 21, 1970, Ser. No. 66,133

Int. Cl. A21d *2/00*

U.S. Cl. 99—94 5 Claims

A dry layer cake mix that is shelf stable, rehydrates quickly and is hand mixable. The process for making the mix includes making a moistened mixture of the ingredients, adding previously dried ingredients thereto and air drying the mixture.

3,694,230

CO-MILLING PROCESS FOR MAKING CULINARY MIXES

Robert R. Cooke, Evendale, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Continuation of application Ser. No. 759,795, Sept. 13, 1968, and continuation-in-part of application Ser. No. 676,740, Oct. 20, 1967. This application Sept. 17, 1970, Ser. No. 73,173

Int. Cl. A23l *1/10*

U.S. Cl. 99—94 5 Claims

Dry, prepared culinary mixes are made by a process which involves co-milling sugar and flour in a multi-impact mill.

3,694,231

PROCESS FOR PREPARING SHELF-STABLE, FREE-FLOWING DEHYDRATED CHEESE PRODUCTS IN GRANULATED OR POWDERED FORM

Henry J. Izzo, Somerset, and Charles O. Burton, Oradell, N.J., assignors to Gentry Corporation, Fair Lawn, N.J.

No Drawing. Filed Aug. 17, 1970, Ser. No. 64,582

Int. Cl. A23c *19/02*

U.S. Cl. 99—115 9 Claims

Free-flowing dehydrated cheese products in powdered, crumbled or granulated form are prepared by simultaneously introducing chunks of cheese and liquefied cryogenic gas into a comnfinution chamber so that the cheese is frozen and ground. The resulting comminuted cheese particles are dried from the frozen state in a fluidized bed while maintaining a temperature below about 21° C.

3,694,232

FLAVORING METHODS AND COMPOSITIONS CONTAINING 3-PHENYL PENTENALS

John B. Hall, Rumson, and Manfred Vock, West Orange, N.J., assignors to International Flavors & Fragrances, Inc., New York, N.Y.

No Drawing. Filed June 4, 1970, Ser. No. 43,555

Int. Cl. A23l *1/26*

U.S. Cl. 99—140 R 21 Claims

Foodstuff flavor augmenting compositions containing a quantity of a 3-phenyl pentenal sufficient to alter the organoleptic characteristics of said compositions and process for preparing the said 3-phenyl pentenals.

3,694,233

STABILIZATION OF COMBINED FOODS AND LIQUIDS

Milton Kaplow, White Plains, and Joseph John Halik, Ossining, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 758,679, Sept. 10, 1968. This application July 29, 1970, Ser. No. 59,350

The portion of the term of the patent subsequent to Jan. 11, 1989, has been disclaimed

Int. Cl. A23l *3/34;* A23b *7/14, 1/14*

U.S. Cl. 99—150 9 Claims

Rectification of the A_w of food solid and liquid phases is effected until they approximate one another and respectively have A_w's less than 0.90 and moisture contents less than 50% which allows novel sauces or gravies to be admixed with food solid while improving shelf stability of both phases and sustaining the desirable textural attributes of the solid components.

3,694,234

COLLAGEN FOOD COATING COMPOSITION AND METHOD OF PREPARATION

Howard W. Jones, 49 Pawnee Road, New Britain Borough, Bucks County, Pa. 18901, and Robert A. Whitmore, 705 E. Mermaid Lane, Philadelphia, Pa. 19118

No Drawing. Application Feb. 27, 1970, Ser. No. 15,304, which is a continuation of application Ser. No. 759,793, Sept. 13, 1968. Divided and this application Jan. 5, 1971, Ser. No. 104,169

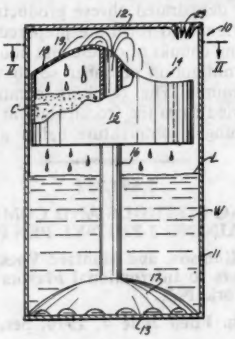
Int. Cl. A23b *1/00*

U.S. Cl. 99—169 2 Claims

Ground collagen is mixed with an aqueous mixture of lactic acid and glyceraldehyde, heated to about 75° C.,

and neutralized to pH 7.0 to make a coating for hamburgers capable of withstanding cooking temperatures without melting.

3,694,235
DISPOSABLE FOOD-VENDING PACKAGE
Sidney Siegel, 989 Schenectady Ave., Brooklyn, N.Y. 11203
Filed Mar. 20, 1970, Ser. No. 21,286
Int. Cl. B65b *29/02*
U.S. Cl. 99—171 B 4 Claims



A disposable food-vending package for making coffee, tea, soup, or other comestible in which water or other liquid dissolves, extracts, irrigates or treats a liquid, solid or semi-solid foodstuff is disclosed having a hermetically sealed disposable and heatable receptacle or can holding in its upper portion a container with a premeasured charge of the fluid-activatable foodstuff. A riser leads up from the lower portion to the receptacle so that water can be conducted up into this receptacle when the can is heated. The sealed cover of the can may be partially opened to permit cooking of the package and pouring-off the finished food product, whereupon the receptacle or can may be discarded.

3,694,236
METHOD OF PRODUCING A DEHYDRATED FOOD PRODUCT
Ray L. Edlin, San Diego, Calif., assignor to Kelco Company, San Diego, Calif.
No Drawing. Continuation of application Ser. No. 48,845, June 11, 1970, which is a continuation of application Ser. No. 734,225, June 4, 1968, which in turn is a continuation-in-part of application Ser. No. 397,322, Sept. 17, 1964. This application June 18, 1971, Ser. No. 154,677
Int. Cl. A23b *7/02*
U.S. Cl. 99—199 2 Claims

A method of producing a dehydrated food product comprising mixing a Xanthomonas hydrophilic colloid with an aqueous food suspension, the quantity of Xanthomonas colloid ranging from about 0.01 to about 1.5 percent by weight of the aqueous food suspension, and then dehydrating the aqueous food suspension. The dehydrated food product can also be produced by dry mixing a dry Xanthomonas hydrophilic colloid with a dehydrated food product.

3,694,237
EDIBLE INK
Chester J. Piotrowski, Royersford, Pa. (% Colorcon Inc., Moyer Blvd., West Point, Pa. 19486)
No Drawing. Filed Mar. 17, 1971, Ser. No. 125,329
Int. Cl. C09d *11/08*
U.S. Cl. 106—30 5 Claims

An edible ink composition for applying indicia to a capsule or tablet comprising partially esterified purified shellac, ethyl alcohol, and a coloring substance selected from edible pigments, lakes, and dyes wherein the partially esterified shellac comprises from about 10% to 50% of the total shellac solids.

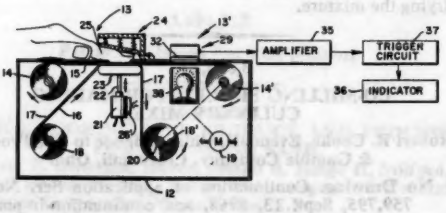
3,694,238
GRAVURE PRINTING PROCESS AND APPARATUS USING MOISTURE-SETTING INKS
Michael J. Tinghitella, Hightstown, N.J., and Kenneth E. Roon, Conklin, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 4, 1968, Ser. No. 710,272
Int. Cl. C09d *11/06*
U.S. Cl. 106—30 1 Claim

A printing process and apparatus wherein a gravure printing press is provided with a pressure drying unit to set a moisture-setting ink that previously has been modified by the addition of glycol and water to the ink formulation to respectively reduce the viscosity of the ink and enhance its sensitivity to water by bringing it substantially to the threshold of precipitation. The drying unit dampens and sets the ink by supplying the additional water necessary to precipitate the resin in the ink formulation and forces the water-glycol blend into the web stock being printed. The advantages of gravure printing are thus obtained without use of the toxic and flammable inks heretofore required with the gravure process.

3,694,239
METHOD OF GRINDING PIGMENT
Martin J. Simon, Natrona Heights, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
No Drawing. Filed Jan. 5, 1971, Ser. No. 104,135
Int. Cl. C09c *1/56, 1/36*
U.S. Cl. 106—309 7 Claims

Pigments are dispersed in a dispersant comprising a solvent solution of methyl 12-hydroxystearate. The pigments are ground in the dispersant and used to pigment coating compositions.

3,694,240
FINGERPRINT IDENTIFICATION SYSTEM AND METHOD
Marvin Miller, Teaneck, N.J.; Robert P. Miller, Spring Valley, N.Y. (both % Sibany Manufacturing Corp., 6 Neil Lane, Riverside, Conn. 06878); and Tibor de Cholnoky, Jr., 70 Hunting Ridge Road, Greenwich, Conn. 06830
Application Sept. 13, 1968, Ser. No. 759,698, which is a continuation-in-part of application Ser. No. 453,440, May 5, 1965. Divided and this application Aug. 14, 1970, Ser. No. 63,888
Int. Cl. A61b *5/10*
U.S. Cl. 117—.5 31 Claims



Method and apparatus for obtaining an individual's fingerprint including a fingerprint impression conforming sheet material, inking means and a fingerprint receiving surface disposed for movement toward each other upon pressing of the individual's fingerprint against the sheet

material to conform said material to the fingerprint and to transfer a representation thereof, by the inking means, to said fingerprint receiving surface.

3,694,241

METHOD FOR CHEMICALLY PRINTING

James L. Guthrie, Ashton, and Francis J. Rendulic, Ellicott City, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Apr. 19, 1971, Ser. No. 135,435
Int. Cl. B41c *1/08;* B41m *1/24;* D06n
U.S. Cl. 117—15 4 Claims

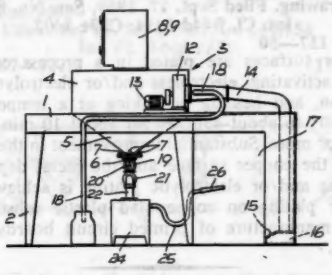
The invention disclosed is directed to a method for printing which includes selectively depositing onto an activator-containing substrate a curable ink composition having as essential ingredients (A) a pigment, (B) a polyene containing at least 2 reactive unsaturated carbon-to-carbon bonds per molecule, and (C) a polythiol containing 2 or more thiol groups per molecule. Optionally, a sensitizer may be included if desired to improve the curing time and efficiency. The activator containing substrate having the ink composition selectively deposited thereon effects cure of the ink composition. The method is particularly useful for high speed printing on absorbent papers such as newsprint. Images thus printed are found to be characterized by high gloss, good color strength, high opacity, and excellent permanence.

3,694,242

METHOD FOR ELECTROSTATICALLY COATING THE SURFACES OF ARTICLES WITH PULVERULENT MATERIALS

Max Ofner, Leonberg, near Stuttgart, Germany, assignor to SFB Spezial-Filterbau M. Ofner K.G., Friolzheim, Wurttemberg, Germany

Continuation of abandoned application Ser. No. 656,081, July 26, 1967. This application Jan. 5, 1971, Ser. No. 104,138
Claims priority, application Germany, July 29, 1966, P 16 96 368.1; May 5, 1967, P 16 46 104.4
Int. Cl. B05b *5/02;* B44d *1/094*
U.S. Cl. 117—17 12 Claims



A method for electrostatically coating the surfaces of articles with pulverulent materials, especially coloring substances, by spraying the material dispersed in an air current upon the article and permitting the recovery of the excessive material which is drawn off by suction from the spray chamber, treated, and then returned to the supply for immediate reuse in the spraying operation.

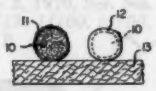
3,694,243

COATING OF PARTICLES AND PROCESS FOR MANUFACTURING SAID COATING

Hugh W. Campbell, Xenia, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Dec. 22, 1969, Ser. No. 886,940
Int. Cl. B44d *1/02*
U.S. Cl. 117—27 8 Claims

A process is disclosed for coating small particles onto a substrate surface wherein the particles initially have a covering of heat softenable material. The particles are coated onto the substrate by being contacted with the substrate while it is at a temperature above that required to cause the heat softenable material to become flowable. The covering on the particles then flows to points of contact between the particles and the substrate and between individual particles themselves. The substrate is cooled to a temperature at which the once-softened material is solid and, perhaps also cross-linked, thereby providing an adhesive binding between the particles and objects touching the particles. The thus-manufactured particle-coated substrate is also considered to be a part of the present invention. In a preferred embodiment of the present invention, the particles are minute, substantially spherical, capsules having capsule walls of a polymeric film-forming material, and containing a capsule internal phase. In that preferred embodiment, the heat softenable material which covers the minute capsules is present, as a covering, in the form of very finely-divided dust clingingly adherent to the capsule walls and is thermosetting after being, initially, heat-softened.



3,694,244

THERMOGRAPHIC STENCIL SHEET AND METHOD OF MAKING AN IMAGED STENCIL SHEET

Leonard G. Larson and Bror E. Anderson, Arlington Heights, and Margery L. Schick, Mount Prospect, Ill., assignors to Weber Marking Systems, Inc., Arlington Heights, Ill.

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,341
Int. Cl. B41n *1/24*
U.S. Cl. 117—35.5 11 Claims

A finely divided silica gel is dispersed in a heat-flowable thermographic stencil sheet coating composition of cellulose acetate butyrate film-forming material and plasticizing material partially but incompletely compatible with the film-forming material, to improve the oil transfer and blocking characteristics of the stencil sheet. The stencil sheet may be imaged by exposing an original in contact with the sheet to infrared radiation to generate heat in the image areas of the original sufficient to render the composition flowable in the image areas of the stencil sheet, and causing the composition to flow from the image areas to thereby form corresponding ink-transmitting openings in the stencil sheet.

3,694,245

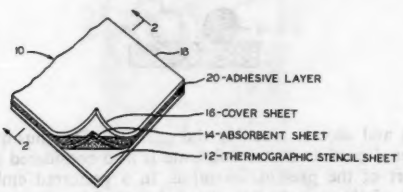
THERMOGRAPHIC STENCIL SHEET, MANUFACTURE THEREOF, AND METHOD OF MAKING AN IMAGED STENCIL SHEET

Bror E. Anderson, 7 W. Cedar, Arlington Heights, Ill. 60005, and Margery L. Schick, 810 S. See Gwun, Mount Prospect, Ill. 60056

Continuation-in-part of application Ser. No. 674,153, Oct. 10, 1967. This application Apr. 22, 1971, Ser. No. 136,373
Int. Cl. B41n *1/24*
U.S. Cl. 117—35.5 23 Claims

The invention relates to a thermographic stencil sheet which may be imaged by heat generated by infra-red ray absorption and which includes an ink-pervious base sheet and an ink-impervious coating thereon of a heat-flowable composition containing a film-forming thermoplastic cellulose ester and plasticizing material that is partially but

incompletely compatible with the film-former. A radiation absorbing, heat generating material may be incorporated in the stencil sheet for generating the heat necessary for imaging. Certain embodiments of the stencil sheet also may be imaged by pressure. The stencil sheet may be employed in an assembly with a contacting absorbent sheet which absorbs part of the heated portion of the coating composition. The stencil sheet is made by coating the base sheet with a solvent solution of the heat-flowable composition, and removing solvent from the coated base sheet. The sheet is imaged by exposing an original in contact



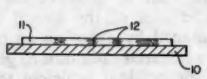
with the sheet to infra-red radiation to generate heat in the image areas of the original sufficient to render the composition flowable in the image areas of the stencil sheet, and causing the composition to flow from the image areas as by absorption by the absorbent sheet to form corresponding ink-transmitting opening in the stencil sheet. Alternatively, the stencil sheet containing radiation absorbing material is imaged by exposing the sheet to infra-red radiation through a negative original to render the composition flowable in the image areas. The composition is then caused to flow from the image areas.

3,694,246

METHOD OF USING DISPLAY DEVICE UTILIZING POLYMER-POLYMER MISCIBILITIES

Antoinette M. Purcell, Cranbury, N.J., and Curt Thies, Morris I. Bank, and James W. Leffingwell, Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed June 24, 1969, Ser. No. 836,021
Int. Cl. B41m *5/18*
U.S. Cl. 117—36.7 **7 Claims**



A display device is disclosed which comprises a film, coating, or body either supported or unsupported, of a combination of at least two polymeric film-forming materials. The eligible polymeric materials can exist in one of two solid states, either being mutually miscible or being mutually immiscible. In the state of immiscibility, the polymeric materials, when cast, form a hazy body; while, in the miscible state, a cast body is substantially transparent. Imaging is achieved, in a body of initially hazy material, by converting the body to a transparent conformation in the image pattern and; in a body of transparent material, imaging is accomplished by causing a haze to form, that is, by causing the polymers to become immiscible in the image pattern. The change from miscibility to immiscibility and vice versa, in films of the display device of this invention, can be accomplished by any of several means, such as by contacting the films with appropriate solvents, changing or subjecting the films to temperature gradients in the proper ranges, or subjecting the films to pressure gradients such as by writing with a stylus.

3,694,247

HEAT-SENSITIVE COPYING MATERIAL

Robert Charles Desjarlais, South Hadley Falls, Mass., assignor to The Plastic Coating Corporation, South Hadley, Mass.

No Drawing. Filed May 11, 1970, Ser. No. 36,440
Int. Cl. B41m *5/18*
U.S. Cl. 117—36.9 **19 Claims**

A heat-sensitive copying material comprising a support having a heat-sensitive layer thereon which comprises a primary aromatic amine, an azo coupling component and a compound which is stable at room temperature but which is capable when heated of providing nitrosonium ion in the heated areas of the copying material in an amount sufficient to diazotize aromatic amine. Thermal imaging processes employing such material are also disclosed.

3,694,248

Patent Not Issued For This Number

3,694,249

PLATABLE POLYPROPYLENE

Ismat A. Abu-Isa, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

No Drawing. Filed Dec. 23, 1970, Ser. No. 101,093
Int. Cl. B44d *1/092*
U.S. Cl. 117—47 A **3 Claims**

A process for plating polypropylene which includes uniformly blending a small proportion of an ethylene-propylene terpolymer, such as EPDM, with the polypropylene, forming an article with the blend, and extensively etching the article surface with a strong oxidizing agent as a surface preparation for plating. Very adherent deposits are obtained without pre-etching.

3,694,250

ELECTROLESS COPPER PLATING

John J. Grunwald, New Haven, Harold L. Rhodenizer, Bethlehem, and Leo J. Slominski, Bristol, Conn., assignors to MacDermid Incorporated, Waterbury, Conn.

No Drawing. Filed Sept. 17, 1969, Ser. No. 858,837
Int. Cl. B44d *1/34;* C23c *3/02*
U.S. Cl. 117—50 **4 Claims**

Copper surfaces are plated in a process comprising etching, activating, electroless and/or electrolytic copper deposition, and heating or baking at a temperature of about 150° to about 450° F. for about 10 min. to about 2 hours or more. Substantial improvement in the adhesion between the copper surface and the metal deposited by electroless and/or electrolytic plating is achieved. Processes for plating on copper-clad plastic substrates and for the manufacture of printed circuit boards are also set forth.

3,694,251

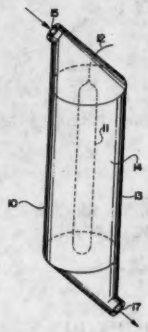
COATED ARTICLE HAVING A LAYER OF BOEHMITE AND ALKYL TITANATE

James F. Houle and Gilden R. Van Norman, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation of application Ser. No. 654,697, July 20, 1967, which is a continuation-in-part of application Ser. No. 505,041, Oct. 24, 1965, now Patent No. 3,486,450, which in turn is a continuation-in-part of application Ser. No. 347,931, Feb. 27, 1964, now Patent No. 3,342,601. This application Nov. 14, 1969, Ser. No. 871,607
Int. Cl. B44c *3/02;* B44d *1/14, 1/44*
U.S. Cl. 117—62 **6 Claims**

A support especially useful for a printing plate or color proofing element carries a hydrophilic layer of a reaction product of a basic metal oxide such as fibrous alumina having the boehmite crystal structure, with an alkyl titanate complex.

3,694,252
METHOD OF FORMING CAPSULES OF POLYMER COATED SILVER HALIDE GRAINS
Arthur M. Gerber, Boston, Sybil N. Story, Cambridge, and Vivian K. Walworth, Concord, Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed May 19, 1971, Ser. No. 144,755
Int. Cl. B44d *1/20*
U.S. Cl. 117—93 18 Claims



This application is directed to a method for preparing microcapsules comprising a nucleus of silver halide surrounded by a continuous wall of a synthetic polymer, which method comprises subjecting the reactants including monomer and silver halide grains in an electrolyte to an electric field between a pair of electrodes whereby the monomers preferentially polymerize around the silver halide.

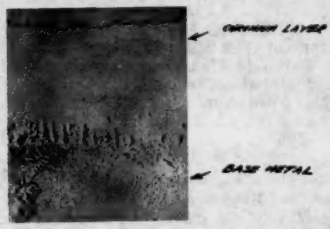
3,694,253
METHOD OF FORMING CAPSULES OF POLYMER COATED SILVER HALIDE GRAINS
Arthur M. Gerber, Boston, and Vivian K. Walworth, Concord, Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed May 19, 1971, Ser. No. 144,754
Int. Cl. B44d *1/50*
U.S. Cl. 117—93.31 17 Claims

This application is directed to a method for preparing microcapsules comprising a nucleus of silver halide surrounded by a continuous wall of a synthetic polymer, which method comprises forming a relatively thin layer of reactants including monomer and silver halide grains and exposing said thin layer to polymerizing radiation whereby the monomers preferentially polymerize around the silver halide.

3,694,254
METHOD OF PRODUCING AND COATING SILVER POWDER AND THE RESULTANT PRODUCT
Warren B. Blumenthal, North Tonawanda, N.Y., assignor to National Lead Company, New York, N.Y.
No Drawing. Filed Dec. 10, 1970, Ser. No. 96,971
Int. Cl. C22b *11/04;* C23f *17/00*
U.S. Cl. 117—100 8 Claims

Silver powder of very fine particle size suitable for the manufacture of electroding pastes is produced by the reduction of an ammoniacal silver nitrate solution with hydrazine, treatment of the resulting aqueous slurry of silver particles with an aqueous solution of the triethanolamine soap of 2-ethylcaproic acid, and drying to form a coating of the soap on the silver powder.

3,694,255
METHOD FOR COATING HEAT RESISTANT ALLOYS
Harry W. Brill-Edwards, New York, N.Y., assignor to Chromalloy American Corporation, Orangeburg, N.Y.
Filed June 3, 1970, Ser. No. 43,082
Int. Cl. C23c *11/00, 13/00, 17/02*
U.S. Cl. 117—107.2 P 8 Claims



The substrate of a heat resistant alloy is coated by pack cementation with an oxidation resistant coating metal while substantially avoiding the formation of an internally oxidized structure within the coating which comprises, embedding a heat resistant alloy article to be coated in a cementation pack comprising said coating metal (e.g. chromium which has a lower propensity to oxidize than an oxidation resistant solute metal in the alloy (e.g. aluminum), and then subjecting the alloy article to pack cementation at an elevated temperature while maintaining the oxygen in the pack at a partial pressure below the oxygen threshold level at which the alloy is subject to internal oxidation.

3,694,256
PROCESS FOR RENDERING CELLULOSIC TEXTILES FLAME RETARDANT
Donald J. Daigle and Leon H. Chance, New Orleans, and George J. Drake, Jr., Metairie, La., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Original application Aug. 29, 1969, Ser. No. 854,326, now Patent No. 3,607,944. Divided and this application Jan. 12, 1971, Ser. No. 105,941
Int. Cl. C09k *3/28;* D06m *13/28*
U.S. Cl. 117—136 4 Claims

Cellulosic textiles are rendered flame retardant by impregnation with aqueous solutions of bis(chloromethyl) phosphorylmethyltriphenyl phosphonium halides.

3,694,257
POLYESTER COMPOSITIONS AND THEIR USE AS TEXTILE ASSISTANTS
Thomas P. Dumont, Cincinnati, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio
No Drawing. Filed July 20, 1970, Ser. No. 56,726
Int. Cl. C10m *7/26*
U.S. Cl. 117—139.5 F 9 Claims

A textile assistant and method of using same which comprises applying to a textile fabric an aqueous emulsion containing as the textile assistant, a polyester prepared from the reaction of polyols such as glycols with a dibasic or tribasic acid having from about 6 to about 54 carbon atoms, preferably a dimerized fatty acid. When tribasic acids are used, a glycol should be employed and when triols are used, dibasic acids should be employed.

3,694,258

DIMENSIONAL STABILIZATION OF WOOL

Edwin J. Vandenberg and William D. Willis, Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 872,344, Oct. 29, 1969, now Patent No. 3,594,355. This application Dec. 28, 1970, Ser. No. 102,162
Int. Cl. D06m 3/06; C09d 3/60
U.S. Cl. 117—141 8 Claims

The dimensional stabilization of fabrics containing keratinous fibers such as wool is described using water-soluble isothiuronium salts of epihalohydrin homopolymers or copolymers with one another or with ethylene oxide.

3,694,259

WELDING ELECTRODE

Philip J. Chapman, West Hill, Ontario, Canada, assignor to Liquid Carbonic Canadian Corporation Limited, Scarborough, Ontario, Canada

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,116
Int. Cl. B23k 35/36
U.S. Cl. 117—206 4 Claims

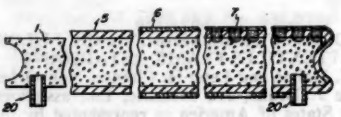
A welding electrode coating composition containing, as a gellant, "Benaqua" beneficiated bentonite. The gellant facilitates the extrusion of the coating onto the metal core of the electrode. On baking the extruded coating is characterized by absence of porosity, cracking, splitting and chipping, or flaking off.

3,694,260

BONDED HEATER, CATHODE, CONTROL ELECTRODE STRUCTURE AND METHOD OF MANUFACTURE

James E. Beggs, 2644 Troy Road, Schenectady, N.Y. 12309

Original application May 21, 1970, Ser. No. 39,463. Divided and this application Mar. 24, 1971, Ser. No. 127,735
Int. Cl. H01j 1/00; B44d 1/18
U.S. Cl. 117—210 8 Claims



A unitary heater, cathode, and control electrode structure for an electron discharge device is formed by coating a disk of a porous refractory metal with an inorganic insulating layer, overcoating the insulating layer with a film of refractory metal, forming a grid pattern in the film on one side of the disk, forming openings in the film and insulating layer corresponding to the pattern, and impregnating the disk with thermionic emissive material.

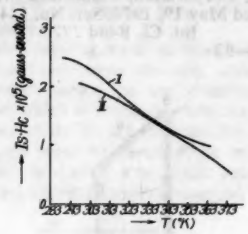
3,694,261

COBALT FERRITE MAGNETIC RECORDING TAPE

Yoshimi Makino, 7–1–110 Nishi-Kaigan 2, Tsujido, Fujisawa-shi; and Higetaka Higuchi, 303–159 Karibacho, Hodogaya-ku, Yokohama-shi, both of Kanagawa, Japan; Iwao Kamiya, 4–15–6 Higashi-jujo, Kita-ku, Tokyo, Japan; and Yoshikazu Masuya, 4–31 Sawaicho, Kawasaki-shi, Kanagawa, Japan

Continuation-in-part of application Ser. No. 802,031, Feb. 25, 1969. This application Feb. 11, 1971, Ser. No. 114,536
Int. Cl. H01f 10/02
U.S. Cl. 117—235 4 Claims

Magnetic recording tape having improved stability toward storage and elevated temperatures, comprising magnetic powder which gives the tape its improved properties, the powder being a cobalt ferrite which is substituted by



means of zinc, magnesium, cadmium, calcium, a mixture of zinc and magnesium, or a mixture of cadmium and calcium.

3,694,262

METHOD AND COMPOSITION FOR SANITATION OF SUGAR FACTORIES

John A. Casey, 2804 Brainard Road, Pepper Pike, Ohio 44124

Filed July 31, 1969, Ser. No. 846,498
Int. Cl. A23l 3/34; C13d 1/02
U.S. Cl. 127—44 7 Claims

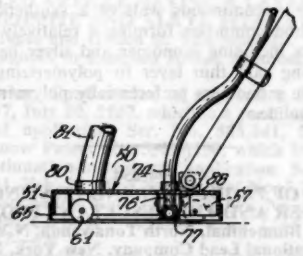
A method of reducing the loss of sugar in sugar factories due to inversion or other degradation of the raw sugar juices caused by bacteria, enzymes and the like which involves the periodic application of shock doses of a bactericidal material to the incoming sugar cane at the entry end of the extraction equipment. This is accomplished in sugar cane mills by applying a solution of a dual quaternary ammonium composition comprising n-alkyl dimethyl benzyl ammonium chloride and n-alkyl dimethyl ethylbenzyl ammonium chloride, to the crusher and the first one, two or three mills, for example, for periods of five minutes during each half hour of operation.

3,694,263

SWIMMING POOL CLEANING METHODS AND APPARATUS THEREFOR

Joseph J. Korn, Sr., 3025 21st Place, North Chicago, Ill. 60064

Filed Oct. 23, 1970, Ser. No. 83,272
Int. Cl. B08b 3/02; E04h 3/20
U.S. Cl. 134—3 7 Claims



A method of cleaning swimming pool surfaces of dirt, algae, mineral stains and other material, without draining the pool, wherein a cleaning head is moved along the

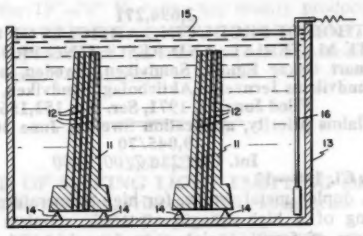
pool to define, with the pool surface, a substantially enclosed space and wherein liquid, in the form of a muriatic acid and water mixture, is delivered in the form of high velocity jets inside said head toward the pool surface and said mixture, along with entrained and dissolved materials, is withdrawn from the head by vacuum without substantial intermingling of the mixture with the pool water whereby the pool can be used immediately after cleaning. Apparatus for performing the method involves a base unit provided with motor-driven pumps, valving and a tank to supply water or an acid and water mixture to a portable cleaning head and with a vacuum pump for withdrawing material from the cleaning head. The cleaning head embodies a casing of a height to define a cleaning chamber permitting scrubbing action of the pool surfaces without forcing of material outside the cleaning head including a depending rubber skirt further confining the action to inside the cleaning head but permitting slight inflow of pool water and material as induced by a vacuum line connection to the cleaning head. The shape of the cleaning head coacts with the vacuum outflow line to induce an arcuate sweeping action of the liquid generally parallel to the pool surface for facilitating withdrawal of liquid and entrained and dissolved material from the head.

3,694,264

CORE REMOVAL

Stuart L. Weinland, Arlington Heights, and Donn K. Coletti, Mundelein, Ill. (both of 250 N. 12th St., Wheeling, Ill. 60090)

Filed Sept. 28, 1970, Ser. No. 56,758
Int. Cl. B08b *9/00*
U.S. Cl. 134—22 R **5 Claims**



Calcia-based cores in metallic objects, such as cast fluid-coolable turbine blades, are efficiently removed by exposing the cores to the action of aqueous solutions of ammonium salts. It is particularly advantageous to use a 5 molar aqueous solution of ammonium chloride.

3,694,265

SHEATH FOR LEAD-ACID STORAGE BATTERY

Erik Gustav Sundberg, Osbacken, Nol, Sweden, assignor to Aktiebolaget Tudor, Stockholm, Sweden

Filed Apr. 14, 1970, Ser. No. 28,436
Claims priority, application Sweden, Apr. 14, 1969, 5,207/69
Int. Cl. H01m *35/04*
U.S. Cl. 136—63 **3 Claims**

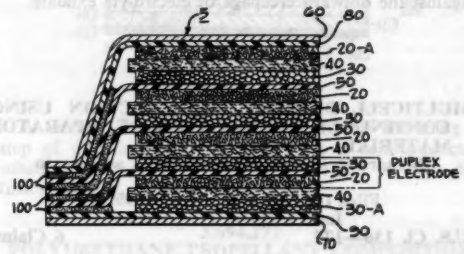
Method and sheath for lead-acid storage battery electrode comprising a braid of glass fiber threads bonded by stem threads of substantially untwisted glass fibers and highly twisted thermoplastic fibers. The stem threads of glass fibers provide axial strength sufficient to allow the heat treating of the sheath while under tension either in a stationary or continuous process.

3,694,266

METHOD OF ASSEMBLING MULTICELL BATTERIES COMPRISING DUPLEX ELECTRODE CONSTRUCTION USING CONTINUOUS ELECTRICALLY CONDUCTIVE PLASTIC CARRIER STRIP

Bernard C. Bergum, Monona, John M. Bilhorn, Edgerton, and Kenneth H. Kenyon, William R. Macaulay, and John A. Youngquist, Madison, Wis., assignors to ESB Incorporated

Filed Dec. 21, 1970, Ser. No. 100,257
Int. Cl. H01m *21/00*
U.S. Cl. 136—111 **5 Claims**



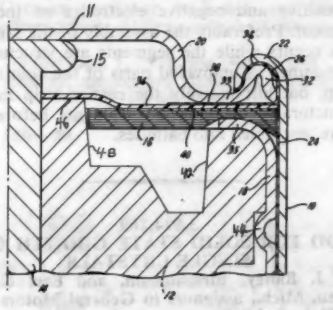
Duplex electrodes are constructed by placing intermittent deposits of positive and negative electrodes on opposite sides of a continuous, electrically conductive plastic carrier strip. The duplex electrodes are then assembled into multicell batteries. The assembly preferably occurs while the duplex electrodes are structurally and electrically connected by the continuous plastic carrier strip after which the carrier strip is subsequently cut between duplex electrodes to obtain structurally and electrically unconnected batteries. Alternatively, the carrier strip may be cut between duplex electrodes before those electrodes are assembled into multicell batteries.

3,694,267

LEAKPROOF CLOSURE SEAL FOR BATTERY

Stephen J. Angelovich, Yonkers, N.Y., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Nov. 23, 1970, Ser. No. 91,760
Int. Cl. H01m *1/02*
U.S. Cl. 136—133 **10 Claims**



The invention comprises the utilization of two separated plastic zones created by upper and lower layers of exudate impervious plastic materials separated by an exudate im-

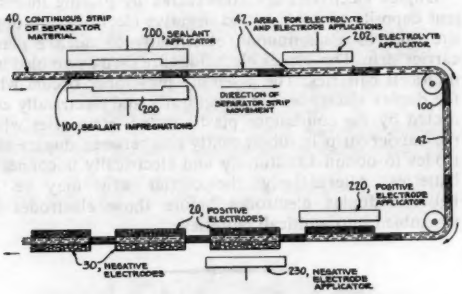
pervious adhesive backed plastic disc. An annular absorbent washer located in the lower zone traps and holds mobile liquids, vapor, gases, and fluids present in that zone while the adhesive backed plastic disc and the lower plastic layer prevent the absorbent washer from discharging any fluids outside of this zone onto the metal terminals of the battery as exudate where evaporation would create the unwanted deposits. The upper zone is established by the dual pressure clamping of the upper plastic layer between the negative terminal of the cell and an inner metal container wall and an outer metal container wall. The function of the upper zone is to electrically insulate the outer can from the negative terminal plate and to seal the cell against the inward diffusion of contaminants and against the outward creepage of electrolyte exudate.

3,694,268

MULTICELL BATTERY CONSTRUCTION USING CONTINUOUS CARRIER STRIP OF SEPARATOR MATERIAL

Bernard C. Bergum, Monona, Wis., assignor to ESB Incorporated

Filed Dec. 21, 1970, Ser. No. 99,981
Int. Cl. H01m *1/00, 23/08*
U.S. Cl. 136—175 **6 Claims**



A continuous strip of separator material is used as a carrier of positive and negative electrodes in the construction of multicell batteries. The positive and negative electrodes are first placed on opposite sides of the continuous carrier strip, and subsequently segments of the carrier strip are assembled into batteries, each segment having opposed positive and negative electrodes on the opposite sides thereof. Preferably the assembly of the segment into batteries occurs while the segments are structurally connected together as undivided parts of the continuous carrier strip, but alternatively the carrier strip may be cut into structurally unconnected segments before the segments are assembled into batteries.

3,694,269

METHOD FOR SOLID STATE GROWTH OF IRON SINGLE CRYSTALS

Donald J. Bailey, Birmingham, and Earl G. Brewer, Warren, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1970, Ser. No. 89,256
Int. Cl. B01j *17/02;* **C21c** *1/26*
U.S. Cl. 148—1.6 **3 Claims**

Large single crystals of iron are grown from a well annealed, uniformly fine-grained specimen which has been given a small amount of plastic strain and then heated to induce recrystallization at one site in the specimen. The recrystallization nucleus is enlarged at the expense of adjacent strained, fine-grained crystals by repeatedly heating the specimen to a temperature above about 750° C. but below about 910° C. for a period of minutes and then cooling below 750° C. The duration of heating at the elevated temperature of each cycle is such that substantial crystal growth on the original nucleus occurs but additional nucleation takes place in the rest of the iron specimen.

3,694,270

HARD SUPERCONDUCTIVE MATERIALS AND METHOD OF PRODUCING THE SAME

Hermann Pfisterer and Isolde Dietrich, Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

No Drawing. Continuation-in-part of application Ser. No. 863,671, Sept. 18, 1969, which is a continuation of application Ser. No. 580,893, Sept. 21, 1966. This application Dec. 21, 1970, Ser. No. 100,430
Int. Cl. C22f *1/02, 1/11;* **C21d** *1/74*
U.S. Cl. 148—11.5 R **14 Claims**

A relatively ductile hard-superconductive material and a method of producing the same wherein a matrix material (i.e. Cr) containing an embedded material (i.e. Nb) capable of combining with O_2, N_2 or mixture thereof to form a hard-superconductive compound is annealed in a gas of O_2, N_2 or a mixture thereof at time-temperature-pressure conditions so that the gas combines with the embedded material to form a hard-superconductive compound within the matrix material.

3,694,271

METHOD OF PRODUCING ARTICLES OF COMPOSITE MATERIAL, AND RESULTING PRODUCTS

Lennart Oskar Egnell, Sandviken, Sweden, assignor to Sandvikens Jernverks Aktiebolag, Sandviken, Sweden

Filed June 11, 1971, Ser. No. 152,156
Claims priority, application Sweden, June 30, 1970, 9,045/70
Int. Cl. C21d *7/00, 1/00*
U.S. Cl. 148—12 **10 Claims**

A duplex metal article, for high-temperature use, consisting of a high-strength austenitic stainless steel and a layer of ferritic stainless steel having high resistance to stress corrosion is produced by the steps of forming a composite billet of the two metals, heat-treating the billet in the way normal for austenitic steel, cold-working the billet, and heat-treating the resulting article at such a temperature that only the ferritic steel is re-crystallized.

3,694,272

METHOD FOR FORMING ALUMINUM SHEET

William R. Mohondro, Dublin, and Maurice C. Fetzer, Walnut Creek, Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Dec. 24, 1970, Ser. No. 101,239
Int. Cl. C21d *7/14, 9/00*
U.S. Cl. 148—12.7 **13 Claims**

A process for the production of thin Al-Zn-Mg sheet material from relatively thick stock, wherein the sheet material undergoes a substantial reduction in thickness with no tendency for edge cracking or tearing, comprising solution heat treating the relatively thick sheet, cold rolling the sheet so as to produce a reduction in thickness between 40% and 75%, preferably between 50% and 70%, artificially aging the sheet, and cold rolling the sheet to the final desired gauge thickness. According to one embodiment of the invention, the solution heat treat-

ment step comprises controlling the temperatures during hot rolling to effect a dissolution of substantially all of the alloying constituents and then quenching the sheet before it is coiled.

3,694,273

COPPER BASE ALLOYS

Jacob Crane, 230 Hill St., Hamden, Conn., and James A. Ford, 51 Pool Road, North Haven, Conn. 06473

Continuation of abandoned application Ser. No. 737,110, June 14, 1968. This application Dec. 21, 1970, Ser. No. 100,424

Int. Cl. C22c

U.S. Cl. 148—32 4 Claims

Copper base alloys containing Al, Si and Co; and Al, Ge, Co alloy additions in the temper rolled or temper rolled and annealed conditions. The alloys of the present invention are characterized by excellent work hardening characteristics.

3,694,274

HIGH-TRANSITION-TEMPERATURE SUPERCONDUCTORS IN THE Nb-Al-Ge SYSTEM

Angelo L. Giorgi and Eugene G. Szklarz, Los Alamos, N. Mex., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Apr. 26, 1971, Ser. No. 137,497

Int. Cl. C22c *27/00;* H01v *11/12*

U.S. Cl. 148—32 3 Claims

Superconducting materials of the nominal composition $Nb_xAl_yGe_{(1-y)}$, where x is in the range of 1.9 to 2.8 and y is in the range of 0.5 to 0.9, having transition temperatures in the 19°–20° K. range are readily produced by annealing arc-melted compositions, or cold-pressed, heat-treated compositions at moderate temperatures for reasonably long times (~50 hours).

3,694,275

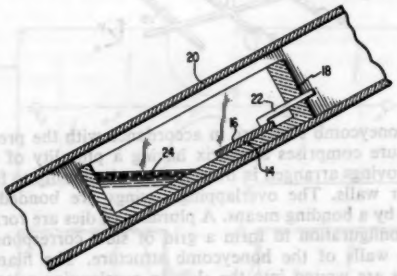
METHOD OF MAKING LIGHT EMITTING DIODE

Herbert Nelson, Princeton, N.J., assignor to RCA Corporation

Filed Mar. 12, 1969, Ser. No. 806,425

Int. Cl. H01l *7/38, 3/00;* H05b *33/00*

U.S. Cl. 148—171 3 Claims



Monocrystalline gallium arsenide of N type conductivity is made by liquid phase growth of a silicon doped epitaxial layer on a gallium arsenide substrate having a (111)-arsenic face as the growth promoting surface.

3,694,276

METHOD OF MAKING INTEGRATED CIRCUITS EMPLOYING SELECTIVE GOLD DIFFUSION THRU POLYCRYSTALLINE REGIONS

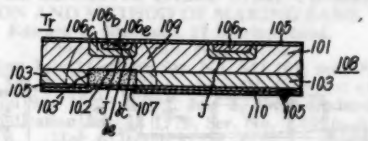
Kinji Wakamiya, Tokyo, and Isamu Kobayashi, Kanagawa-ken, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 25, 1969, Ser. No. 852,819

Claims priority, application Japan, Aug. 24, 1968, 43/60,713, 43/60,714

Int. Cl. H01l *7/36, 11/00;* C23c *13/00*

U.S. Cl. 148—174 4 Claims



A method of making integrated circuits including a step of diffusing gold selectively into a semiconductor substrate through a polycrystalline region of high diffusion velocity.

3,694,277

POLYURETHANE PROPELLANT COMPOSITION CONTAINING ISODECYL ORTHOFORMATE

David C. Sayles, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Feb. 23, 1967, Ser. No. 619,117

Int. Cl. C06d *5/06*

U.S. Cl. 149—19 5 Claims

Isodecyl orthoformate used as an ingredient for removing trace quantities of moisture from propellant compositions.

3,694,278

PROCESS AND COMPOSITION FOR USE IN MUNITIONS CONTAINING WHITE PHOSPHORUS

Jean P. Picard, Morristown, and H. William Voight, Jr., Stanhope, N.J., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed July 24, 1970, Ser. No. 58,183

Int. Cl. C06d *1/08*

U.S. Cl. 149—29 17 Claims

A process wherein a solidified complex of white phosphorus and polyester is dispersed in a polyurethane matrix concurrent with or prior to shaping in the form of a munition.

3,694,279

METHOD OF MAKING A RETRACTILE CORD

Herbert Rohrig, Schwarzenbruck, and Fritz Loy, Heroldsberg, Germany, assignors to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed Dec. 7, 1970, Ser. No. 95,609

Claims priority, application Germany, Dec. 13, 1969, P 19 62 536.6

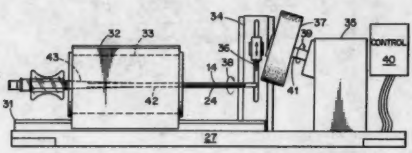
Int. Cl. H01b *7/06, 13/00*

U.S. Cl. 156—50 3 Claims

A retractile twin conductor cord of helical configuration is made so that one conductor is disposed radially

displaced on top of the other, and their insulation sheathings are joined along a helix.

3,694,280
METHOD OF FORMING AN END TAPER ON PLASTIC TUBING
William A. Hoef, Groton, Conn., assignor to Edward Weck & Company, Inc., Long Island City, N.Y.
Filed May 1, 1970, Ser. No. 33,690
Int. Cl. B32b *19/16, 31/26*
U.S. Cl. 156—73 16 Claims



A methods for manufacturing an intravenous needle assembly including a flexible catheter having a smooth surfaced taper at the distal end. In particular, the method concerns forming a smooth surfaced taper at the end of a tube of heat shrinkable plastic material by means of grinding or by the application of heat to the end being tapered, or both.

3,694,281
PROCESS FOR FORMING A DIAPHRAGM FOR USE IN AN ELECTROLYTIC CELL
Joseph-Adrien Leduc, Short Hills, N.J., assignor to Pullman Incorporated, Chicago, Ill.
No Drawing. Continuation-in-part of application Ser. No. 814,821, Apr. 9, 1969. This application Apr. 28, 1969, Ser. No. 819,998
Int. Cl. B01k *3/10;* B32b *5/18;* C03c *25/00*
U.S. Cl. 156—77 2 Claims

An improvement in the operation of an electrolytic cell having a diaphragm positioned between an anode and a cathode of the cell is provided by employing a diaphragm comprising an asbestos matrix impregnated with at least one of a group of polymers including synthetic rubbers and thermoplastic and thermosetting polymers and copolymers. A controlled amount of the polymeric impregnant is deposited in the spaces between the asbestos fibers to provide controlled and reproducible permeability and density in a diaphragm having greatly improved wet strength. Because of the superior strength of the impregnated diaphragm, they can be employed in the electrolytic cell without support and can be subjected to the conditions of lamination so as to be combined on an inseparable sheet or layer of wire mesh of a plastic woven fabric or a sintered porous plastic and employed in laminated form as the diaphragm in an electrolytic cell.

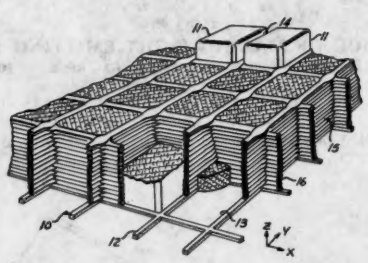
3,694,282
METHOD FOR THE CONNECTION OF THE ENDS OF BELTS
Hendrik Ribbels, 4 Marinus Naefflaan, Lochem, Netherlands, and Johannes Lefferts, 396 Brinkstraat, Enschede, Netherlands
Filed Mar. 3, 1969, Ser. No. 803,809
Claims priority, application Netherlands, Mar. 1, 1968, 6802950
Int. Cl. B31f *5/00*
U.S. Cl. 156—157 3 Claims

Ends of the same or different belts are joined together by abutting the ends and temporarily connecting the ends to a rigid support element. The surface of at least one of the ends is coated with a medium which when heated joins the ends together and the same surface or the surface of the other end or both surfaces are provided with means which generates heat when the surfaces are in abutting relation. Such means may be an electrical resistance element embedded in the medium and connected in circuit with conductive members in the rigid element extending the width of the belt. After the belt ends are joined, the rigid support element is removed.

3,694,283
WIRE OVERHEAD
Ralph F. Cooper and Charles J. Wagner, Akron, Ohio, assignors to the B. F. Goodrich Company, New York, N.Y.
Original application July 13, 1966, Ser. No. 564,778, now Patent No. 3,573,135. Divided and this application Oct. 23, 1969, Ser. No. 870,312
Int. Cl. B31f *5/00*
U.S. Cl. 156—159 8 Claims

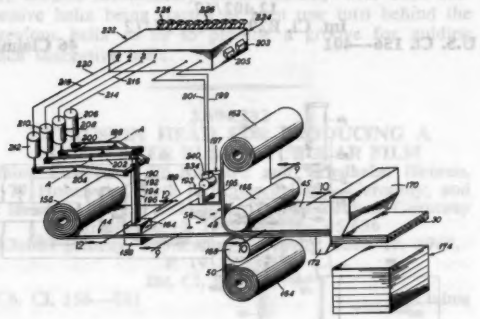
A method for fabricating a continuous web having acute angularly disposed wire strands relative to its longitudinally extending length from narrow strips by passing a plurality of wire strands through an extruder which prepares a narrow width tape with wire strands embedded therein. Such tape is then cut into elongated sections, after which the sections are spliced along their edges so that their respective cut edges form the side edges of a continuous web that may be used as a wire overhead.

3,694,284
METHOD OF MAKING HONEYCOMB STRUCTURES
Robert V. Kromrey, Fair Oaks, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.
Continuation-in-part of application Ser. No. 648,447, June 23, 1967. This application Nov. 10, 1969, Ser. No. 875,433
Int. Cl. B31c *13/00*
U.S. Cl. 156—172 8 Claims



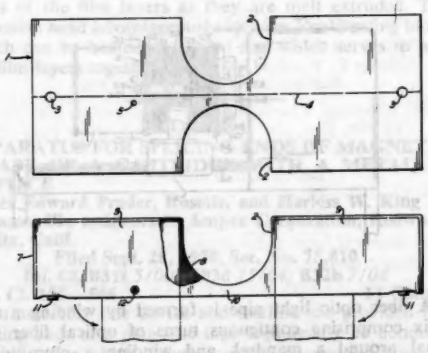
A honeycomb structure in accordance with the present disclosure comprises a matrix having a plurality of filament rovings arranged in overlapping relationship to form cellular walls. The overlapping rovings are bonded together by a bonding means. A plurality of dies are formed in a configuration to form a grid of slots corresponding to the walls of the honeycomb structure. The filament rovings are wound into the slots in overlapping relationship to assume the desired configuration. Preferably, the rovings are wrapped so that at the intersection of crossing and overlapping filament rovings, the rovings are flattened into chamfered areas of the cells so as to increase the area of the bond between overlapping and intersecting rovings, thereby increasing the strength of the honeycomb wall structure in a Z or radial direction.

3,694,285
METHOD FOR MAKING ENCODED CARDS
Arthur V. Appel, Chicago, John S. Davis, Evanston, and Donald A. Pontarelli, Chicago, Ill., assignors to Bliss & Laughlin Industries, Incorporated, Oak Brook, Ill.
Filed Sept. 29, 1970, Ser. No. 76,537
Int. Cl. B32b 7/00
U.S. Cl. 156—179 8 Claims



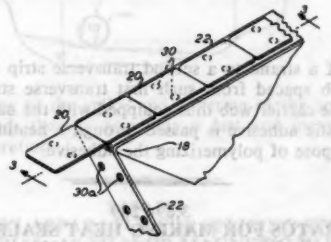
An elongated core strip having a layer of parallel, light-transmitting fibers, is continuously uncoiled and advanced along a line of movement parallel to the fibers. The core strip is periodically encoded at intervals along its length by cutting, punching, darkening, or otherwise impairing the light-transmitting ability of fibers in selected portions of the layer across the width of the core strip. The remaining unimpaired light transmitting fibers are irregularly-spaced in an information-related array extending across the width of the core strip. A pair of protective cover strips are continuously uncoiled and bonded integrally with opposite sides of the core strip. The resulting three part laminate continues to advance along the line of movement as a continuation of the core strip and is periodically sheared at intervals along a line between the encoded portions to provide individual cards. The fore and aft edges of the cards are ground, if necessary, to expose the ends of at least the unimpaired light-transmitting fibers.

3,694,286
METHOD OF MAKING BREATHING BAGS
Layton A. Wise, 292 Franklin Terrace, Washington, Pa. 15301
Original application Feb. 19, 1970, Ser. No. 12,202, now Patent No. 3,638,648. Divided and this application Mar. 22, 1971, Ser. No. 126,573
Int. Cl. B31b 49/04
U.S. Cl. 156—211 4 Claims



An opening is formed in a strip of impervious flexible material near each end, and an inwardly extending recess is formed in each side of the strip midway between its ends. The strip then is folded along a longitudinal center line to register the recesses with each other and the edges of the folded strip are sealed together. An area of the strips extending from the recesses to the fold also is sealed, whereby two bags are formed that are connected by a neck band so that the bags can be suspended against the chest with their folds adjacent each other.

3,694,287
PRESSURE SENSITIVE LABEL STRIP CONSTRUCTION AND METHOD OF MAKING SAME
Edward C. Marshall, 17 Marion Road, Upper Montclair, N.J. 07043
Application July 11, 1969, Ser. No. 841,100, now Patent No. 3,501,365, which is a continuation-in-part of application Ser. No. 562,771, July 5, 1966. Divided and this application Jan. 12 1970, Ser. No. 7,435
Int. Cl. B32b 31/18, 3/16
U.S. Cl. 156—257 6 Claims

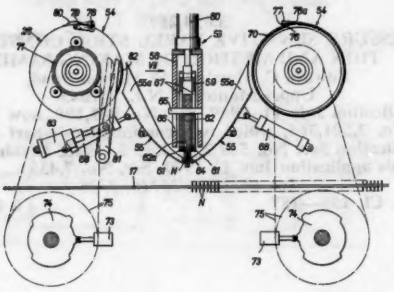


A plurality of labels with pressure sensitive adhesive thereon are disposed along a supporting material of release paper in either spaced or juxtaposed relationship and with feed holes formed in the release paper so that all the feed holes lie within the peripheral limits of associated labels and so that some release paper also lies within the peripheral limits of the feed holes; said periphery of said feed holes either being formed in a complete geometric shape or an incomplete geometric shape. When the label and supporting material is thereafter fed by a pin feed drum about a stripping edge, in those situations where the feed holes are defined by a complete geometric periphery the portion of the supporting material therewithin travels with the label as it is stripped from support material; while in those situations where the feed holes are defined by an incomplete geometric shape the support material therewithin remains with the web of supporting material and is moved out of the plane thereof when said supporting material coacts with the pin feed drum in a chadless type operation.

3,694,288
METHOD FOR THE FABRICATION OF NAIL PLATES AND APPARATUS FOR THE PERFORMANCE OF THE AFORESAID METHOD
Hans Iseli, Ligerz, Switzerland, assignor to Vereinigte Drahtwerke A.G., Biel, Berne, Switzerland
Filed Mar. 29, 1971, Ser. No. 128,894
Claims priority, application Switzerland, Apr. 8, 1970, 5,096/70
Int. Cl. B32b 31/18
U.S. Cl. 156—269 16 Claims

A method and apparatus for the fabrication of so-called nail plates, typically used in the construction industry, wherein a carrier web is placed upon a conveyor

element moving in a substantially horizontal direction, the carrier web being displaced or moved through substantially regular incremental steps. Nail pins pointed at both ends are inserted into a first transverse strip of the carrier web during each period of standstill of the carrier web and a liquid plastic adhesive is also applied in the



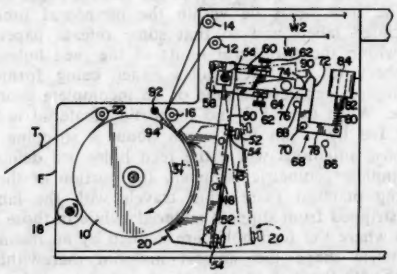
form of a strand to a second transverse strip of the carrier web spaced from such first transverse strip. Thereafter the carrier web thus equipped with the nail pins and the plastic adhesive is passed through a heating zone for the purpose of polymerizing the adhesive.

3,694,289

APPARATUS FOR MAKING HEAT SEALED TUBES

Thomas E. Piazze, Mount Vernon, Ohio, assignor to Continental Can Company, Inc., New York, N.Y.

Filed June 22, 1970, Ser. No. 48,331
Int. Cl. B29c *27/00*
U.S. Cl. 156—380 **4 Claims**



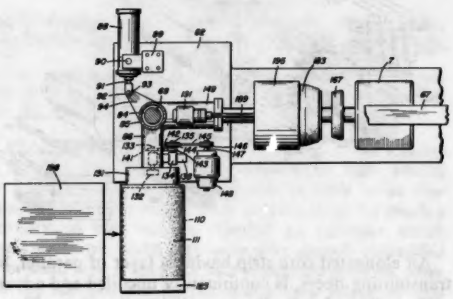
An apparatus for fabricating multiple tubes from heat sealable film material in a continuous operation which comprises a cooling drum, means for guiding webs of the film material from a pair of supply rolls into superimposed relation and about a portion of the periphery of the cooling drum, radiant heat sealing devices spaced in paired relation axially of the drum which form relatively narrow, parallel, axially spaced seams in the superimposed material, and narrow flexible strips of material disposed so as to lie between the film and the peripheral surface of the drum so as to form ribs on the latter at the seam forming areas, the strips serving to hold the seam forming portions of the material in surface engagement while the seal is being formed and also constituting a heat transfer barrier.

3,694,290

APPARATUS FOR THE MANUFACTURE OF PNEUMATIC TIRES

Antonio Pacciarini and Dante Pirovano, Milan, Italy, assignors to Industrie Pirelli S.p.A.

Continuation of abandoned application Ser. No. 701,585, Jan. 30, 1968. This application Feb. 12, 1971, Ser. No. 115,124
Claims priority, application Italy, Feb. 8, 1967, 12,402/67
Int. Cl. B29j *17/10, 17/12*
U.S. Cl. 156—401 **46 Claims**



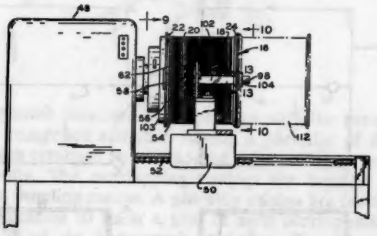
Apparatus for the manufacture of pneumatic tires comprising means for disposing a plurality of carcass plies in the form of a continuous tubular ring around a cylindrical support, means operative with said support to clamp one edge of said ring to said support, means to move the support into coaxial relationship with one side of the building drum with said clamped edge being adjacent said one side, means to turn said plies from said support onto said drum in such a manner that their inner faces are turned towards the outside and means to apply bead cores and filler strips and to turn up the edge of said plies around said beads and filler strips.

3,694,291

APPARATUS FOR MAKING LIGHT PIPES

John H. McAllister, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Original application Mar. 27, 1968, Ser. No. 716,446, now Patent No. 3,544,406. Divided and this application Apr. 2, 1970, Ser. No. 29,354
Int. Cl. B65h *81/06*
U.S. Cl. 156—431 **9 Claims**



A fiber optic light pipe is formed by winding a first helix comprising contiguous turns of optical fiber material around a mandrel, and winding a plurality of other optical fiber helices over the first in the same helix direction. Successive helices are formed by directing the separate fiber strand forming each helix into

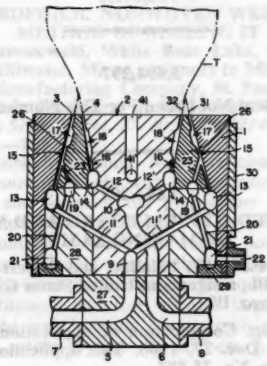
the groove formed between and above turns of the helix immediately thereunder, to provide a closely packed and correctly aligned cross section of optical fibers. The centers of the fibers in successive helices are aligned diagonally with respect to the mandrel axis with each fiber substantially adjoining six others in honeycomb fashion. In a preferred embodiment, the various helices are wound substantially simultaneously with each successive helix being started at least one turn behind the previous helix so as to provide a groove for guiding each successive helix.

3,694,292

EXTRUSION HEAD FOR PRODUCING A MULTILAYER BLOWN TUBULAR FILM

Heinz Schippers, 39 Ringstr.; and Friedhelm Hensen, 79 Hohenweg, both of Remscheid-11, Germany; and Reinhold Jung, Pohlhausen, Wermelskirchen, Germany

Filed June 12, 1970, Ser. No. 45,636
Claims priority, application Germany, June 19, 1969, P 19 30 987.6
Int. Cl. B22d *23/04*
U.S. Cl. 156—501 **12 Claims**



An extrusion head for producing a multilayer blown tubular film from thermoplastic polymer melts with the film layers being adhered by a bonding agent, the extrusion head including at least one annular channel associated with two adjacent melt extrusion passages and in fluid connection with at least one of the two passages to provide an uninterrupted, uniform surface coating of a liquid bonding agent on at least one of the opposing surfaces of the film layers as they are melt extruded. The extrusion head advantageously includes a calibrating block which can be heated or cooled and which serves to join the film layers together.

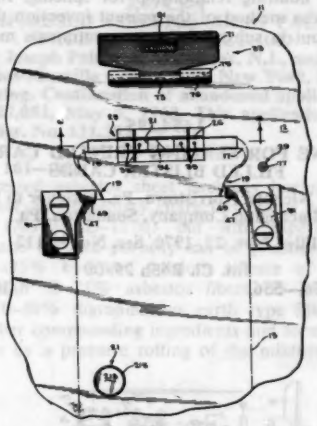
3,694,293

APPARATUS FOR SPLICING ENDS OF MAGNETIC TAPE OF A CARTRIDGE WITH A METALLIC SPLICE

James Edward Prader, Roselle, and Harless W. King II, Itasca, Ill., assignors to Ampex Corporation, Redwood City, Calif.

Filed Sept. 28, 1970, Ser. No. 75,810
Int. Cl. B31f *5/00*; G03d *15/04*; B32b *7/04*
U.S. Cl. 156—506 **11 Claims**

An assembly line device and method are provided for splicing ends of a magnetic tape together by an adhesive bearing splice which is automatically severed from a web transferred to the aligned tape ends and pressed thereagainst. The splice web preferably has a pressure sensitive adhesive on one side thereof covered by a backing strip which is peeled therefrom and wound on a take-up spool. In response to operation of a switch means, a motor means causes the automatic feeding of the splicing web, severing of the splice and adhering of the splice to the tape ends thereby providing a fast and inexpensive splicing operation.

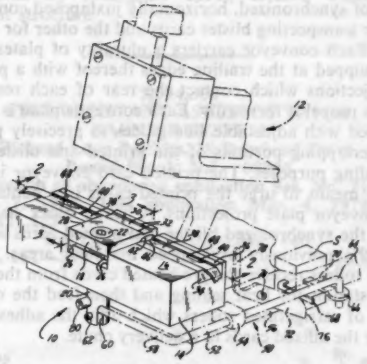


3,694,294

SPLICING APPARATUS FOR SPLICING STRIP MATERIAL, AS FILM OR MAGNETIC TAPE

Gasper Cafiero, Brooklyn, N.Y., assignor to Metra Electronics Corporation, Brooklyn, N.Y.

Filed Nov. 27, 1970, Ser. No. 93,100
Int. Cl. G03d *15/04*; B26d *5/08*
U.S. Cl. 156—507 **5 Claims**



Splicing apparatus for splicing strip material comprises a splicing stage having a longitudinally extending groove therein adapted to holdingly receive the two ends of the strip material to be spliced. The stage is provided with a movable cutting block, which in a first position has its upper surface flush with the operative surface of the stage. The cutting block is provided with a mating groove forming a continuation of the groove on the stationary portion of the stage. Means are provided for lifting the cutting block to a second position in which parallel cutting edges on the lower surface of said cutting block at opposite edges thereof are in raised position and adapted to

receive the non-mating strip ends thereunder. As the block is returned to its flush position strip edges are simultaneously severed to form accurately mated edges on said strip ends whereupon said strip ends may be moved within said groove on said cutting block into substantially contiguous abutting relationship for splicing. In accordance with the method of the present invention the above is carried out in substantially one continuous movement.

3,694,295

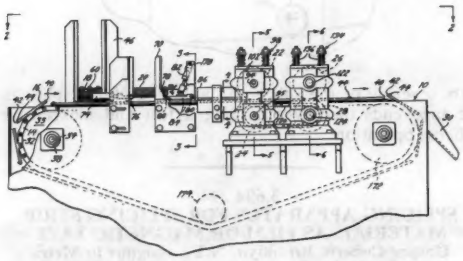
MACHINE FOR SEALING PRINTED CARDS TO FILLED BLISTER CARDS

Mathew Nichols, Norristown, Pa., assignor to Sauter Packaging Company, Souderton, Pa.

Filed Nov. 23, 1970, Ser. No. 92,112

Int. Cl. B65h *29/00*

U.S. Cl. 156—556 18 Claims



A machine for sealing printed cards to previously filled blister type medicinal tablet containing packages, including a pair of synchronized, horizontally juxtaposed conveyors, one for transporting blister cards and the other for printed cards. Each conveyor carriers a plurality of plates which are equipped at the trailing edges thereof with a plurality of projections which contact the rear of each respective card to propel it forwardly. Each conveyor plate is further equipped with adjustable side guides to precisely position the overlapping portions of the printed and blister cards for sealing purposes. The printed card conveyor includes pusher means to urge the printed cards into contact with the conveyor plate projections. A heater block station receives the synchronized blister and printed cards and preheats the previously overlapped marginal areas. Rotary heated rollers receive the pre-heated cards from the heater block station for heat sealing and then feed the cards to a pair of refrigerated rollers which affix the adhesive and deliver the affixed cards to a delivery chute.

3,694,296

THREE DIMENSIONAL ARTISTIC DESIGN CONSTRUCTION AND METHOD OF PRODUCING SAME

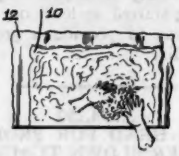
John E. Frontino, 61—35 98th St., Rego Park, N.Y. 11374

Filed Feb. 9, 1970, Ser. No. 9,827

Int. Cl. B44f *7/00*

U.S. Cl. 161—18 4 Claims

The invention encompasses a construction and method of production of a three dimensional and irregular design as an artistic creation and involves utilization of a base panel and a superposing molded panel of moldable sheet material secured to the base panel, said molded panel being in the formation of any haphazard or irregular design. The



design is made from a hand or machine molding of said sheet material and results in at least an outer surface which affords highlighting and shaded areas to create an artistic work. When the design is hand molded, artistic and orignal creations result.

3,694,297

Patent Not Issued For This Number

3,694,298

DECORATED GYPSUM BOARD AND METHOD OF MAKING SAME

William C. Veschuroff, Palatine, and Robert M. Mustoe, Winnetka, Ill., assignors to United States Gypsum Company, Chicago, Ill.

No Drawing. Continuation of application Ser. No. 604,647, Dec. 27, 1966. This application May 8, 1970, Ser. No. 35,887

Int. Cl. B32b *29/04;* E04c *2/10*

U.S. Cl. 161—43 7 Claims

A porous decorated paper is made by first coating and then embossing a paper sheet, and a predecorated gypsum board is made utilizing such paper as one of the cover sheets.

3,694,299

MULTIPLE GLAZED UNIT AND METHOD OF MANUFACTURE

William E. Wagner, Verona, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Continuation of application Ser. No. 785,790, Dec. 20, 1968. This application May 27, 1971, Ser. No. 147,640

Int. Cl. C03b *23/24, 39/00*

U.S. Cl. 161—45 13 Claims

A multiple glazed unit comprising a pair of spaced glass sheets is formed by depositing a metal oxide on the interfacial surface of at least one of the glass sheets, and then fusing the edge portions of the sheets together. The metal oxide film has a water-wetting surface contact angle of from about 40° to about 90°. The metal oxide film can also be produced by depositing an organo-metallic film forming material on the interfacial surface and then heating the organo-metallic material to a temperature sufficient to produce the metal oxide film.

3,694,300
BASE PRODUCT FOR TEXTILE REPLACEMENT AND METHOD OF PRODUCING THE SAME
Rudolph Ernst Small, Green Bay, Wis., assignor to Paper Converting Machine Company, Inc., Green Bay, Wis.
Filed Aug. 27, 1971, Ser. No. 175,491
Int. Cl. B32b *1/00, 3/02*
U.S. Cl. 161—127 8 Claims

A base product for a textile replacement such as paper garments, paper bedsheets, etc. in which a scrim-like material is confined between adjacent webs which are equipped with nested embossments.

3,694,301
HYDROPHILIC NONWOVEN WEB AND METHOD OF MAKING IT
Larry E. Gruenewald, White Bear Lake, and John F. Kistner, Stillwater, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Filed Jan. 4, 1971, Ser. No. 103,813
Int. Cl. B32b *5/18, 27/04, 27/40;* C08g *22/44;* D06n *3/14*
U.S. Cl. 161—159 14 Claims

The disclosed hydrophilic webs are obtained by impregnating nonwoven webs with an isocyanate-terminated prepolymer and foaming the prepolymer in situ with water or steam. The prepolymer is preferably derived from an aromatic diisocyanate and a polyoxyethylene diol having an OH equivalent weight of 300–2,200. The resulting webs have good strength (adequate for use in leather substitutes), and low stiffness (temper) properties. When the web is moist, the strength properties are substantially retained, and the stiffness is even lower.

3,694,302
Patent Not Issued For This Number

3,694,303
PACKING BLOCK
Jean Alin Robert Caillas, 29 Rue d'Estienne d'Orves, Viroflay, France
Filed Feb. 2, 1971, Ser. No. 111,888
Claims priority, application France, Feb. 2, 1970, 7003554
Int. Cl. B32b *7/06;* B65d *85/30*
U.S. Cl. 161—164 6 Claims

The invention relates to a packing block comprising removable layers of foil for regulating the thickness of the block, the foils on one face being of a different thickness from those of the other, and the thickness of the foils on one face being a multiple of the thickness of the foils on the other, the invention being intended for making packing blocks for arresting play or balancing, particularly in the field of precision equipment.

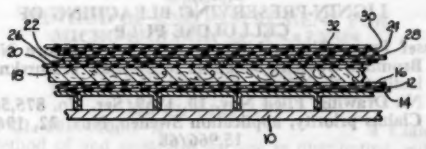
3,694,304
COMPRESSED ASBESTOS SHEET PACKING PRODUCTS AND METHOD
Henry Joseph Palumbo, Middlesex, N.J., assignor to Johns-Manville Corporation, New York, N.Y.
No Drawing. Continuation of abandoned application Ser. No. 727,051, May 6, 1968. This application Apr. 5, 1971, Ser. No. 131,392
Int. Cl. B32b *19/00*
U.S. Cl. 161—168 14 Claims

Compressed asbestos sheet packings having the low density and compressibility characteristics of beater sheet packing (ASTM D-1170) but with superior tensile strength and reduced porosity can be produced by combining 3–25% hydrated calcium silicate of low bulk density with 50-75% asbestos fibers, 13–35% rubber binder, 10–50% diatomaceous earth type filler and 2–15% rubber compounding ingredients and forming sheets therefrom by a pressure rolling of the mixture.

3,694,305
FLAME RETARDANT FIRE BARRIER COMPOSITION AND LAMINANT
Sheikh Mohammad Munawwar, Metuchen, N.J., assignor to Compac Corporation, Newark, N.J.
No Drawing. Filed Jan. 11, 1971, Ser. No. 105,632
Int. Cl. B32b *15/06, 15/08, 15/12, 19/04, 25/06, 27/30, 29/00*
U.S. Cl. 161—205 9 Claims

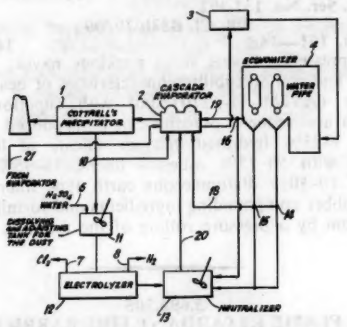
An improved flame retardant fire barrier adhesive composition embodying a novel emulsion type laminant. The emulsion type laminant is not only an inherently nonburning adhesive by itself, but also imparts flame-retardancy to an otherwise combustible outer surface of a combustible fibrous substrate of a laminate of which it is the laminant, or otherwise makes itself available to smother any flame by synergistic effect, created within the laminant structure.

3,694,306
FIRE-RESISTANT ASBESTOS VAPOR BARRIER SYSTEM
Richard Leon Fricklas, 10 Deerhead Drive, Bound Brook, N.J. 08805
Continuation of abandoned application Ser. No. 711,309, Mar. 7, 1968. This application Mar. 4, 1971, Ser. No. 121,123
Int. Cl. B32b *11/02;* E04c *1/40*
U.S. Cl. 161—205 10 Claims



A layer of asphalt impregnated asbestos felt is adhered to a metal roof deck by noncumbustible adhesive and a layer of noncombustible insulating boards is adhered to the asbestos felt by mopping asphalt. A conventional built-up roof can be installed over the insulating boards.

3,694,307
PROCESS FOR REMOVING CHLORINE FROM PULP COOKING AGENTS
Koji Iwahashi, Nagayo-machi, Nishisonogi-gun, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 12, 1970, Ser. No. 63,167
Claims priority, application Japan, Aug. 13, 1969, 44/64,005
Int. Cl. D21c *11/12*
U.S. Cl. 162—30 10 Claims



Dechlorination of pulp cooking liquors in either continuous or batchwise manner from recovery boiler system in paper pulp manufacture is effected by acidification with sulfuric acid followed by electrolysis using an insoluble anode such as titanium plated with platinum, or lead dioxide, and with cast iron cathode.

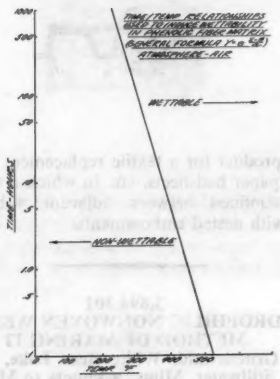
3,694,308
BAGASSE FIBER PRODUCT AND PROCESS
Roland Botz, San Juan, Puerto Rico, assignor to Plasti-Fiber Formulations, Inc., Mercedita, Puerto Rico
Continuation-in-part of application Ser. No. 758,903, Sept. 10, 1958. This application Oct. 9, 1969, Ser. No. 866,123
Int. Cl. D21c *9/08*
U.S. Cl. 162—55 7 Claims

Bagasse is treated with an aqueous solution of alum and defibrated to give a fibrous product suitable for the reinforcement of resin bodies. The fiber can also be pulverized to yield a flour suitable for use as a filler in resin bodies. The treatment also produces a clean, sugar free, moisture resistant, low density cellular pith material suitable for manufacturing insulation and acoustical materials, as a filler for synthetic foam products, and as a filler for animal feed formulations.

3,694,309
LIGNIN-PRESERVING BLEACHING OF CELLULOSE PULP
Josef Franz Gierer, Lidingo, and Carl Torbjorn Norin, Bromma, Sweden, assignors to Svenska Traforskningsinstitutet, Stockholm, Sweden
No Drawing. Filed Nov. 10, 1969, Ser. No. 875,564
Claims priority, application Sweden, Nov. 22, 1968, 15,966/68
Int. Cl. D21c
U.S. Cl. 162—65 3 Claims

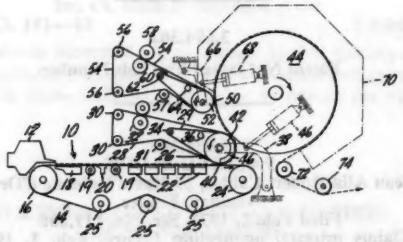
A bleaching process for cellulose pulps and which enables the lignin in the pulp to be preserved comprises bleaching of the pulp in the presence of an organic peroxide, which is produced by contacting a peroxide forming organic compound with air or a gas containing free oxygen.

3,694,310
FUEL CELL ORGANIC FIBER MATRIX
Roger C. Emanuelson, Glastonbury, Robert C. Stewart, West Suffield, and Raymond W. Vine, Tolland, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Dec. 16, 1970, Ser. No. 98,791
Int. Cl. D21h *3/50*; H01m *3/00*
U.S. Cl. 162—157 R 6 Claims



A wettable organic fiber matrix is provided by coating phenolic resin fibers with a phenolic beater addition resin forming the matrix, curing the beater addition resin, and making the matrix wettable by heating the matrix in air or in a partially inert atmosphere.

3,694,311
MACHINE FOR MAKING THIN PAPER
Nils Petri Skeppstedt, Ulvsby, Sweden, assignor to Aktiebolaget Karstads Mekaniska Werkstad, Karlstad, Sweden
Filed Jan. 18, 1971, Ser. No. 107,114
Int. Cl. D21f *5/00, 9/00*
U.S. Cl. 162—290 7 Claims



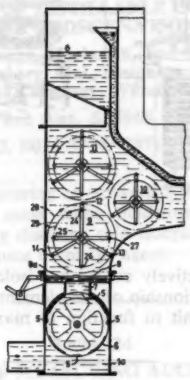
A paper-making machine comprises a forming section, in which a web is formed on a moving foraminous member, a heated, rotating "Yankee" dryer cylinder positioned in proximate, spaced relation to a pick-up location on the foraminous member, and a combination rotating suction pickup, couch, transfer and press roll positioned in light engagement with the foraminous member at the pick-up location and in de-watering pressure engagement against the surface of the Yankee dryer cylinder. The combination roll picks the web off the foraminous member, transfers it to the Yankee dryer cylinder and presses it in a press nip with the Yankee dryer cylinder to further remove liquid prior to drying on the cylinder. One or more additional presses can be used in conjunction with the Yankee dryer cylinder downstream from the combination roll.

3,694,312

DISINTEGRATING AND DEFLOCCULATING DEVICE IN INLET BOXES OR PAPERMAKING MACHINES

Helge Natanael Sköldkvist, deceased, late of Rundviksverken, Sweden, by Amy Maria Sköldkvist, Storgatan 28A, Umea, Sweden, Hans Mårten Sköldkvist, 910 02, Rundviksverken, Sweden, and Birgitta Helena Paget, Regngation 4, Uppsala, Sweden, sole heirs

Continuation of application Ser. No. 817,300, Apr. 17, 1969. This application May 25, 1971, Ser. No. 146,841
Claims priority, application Sweden, Apr. 25, 1968, 5,577/68
Int. Cl. D21f *1/06*
U.S. Cl. 162—342 7 Claims



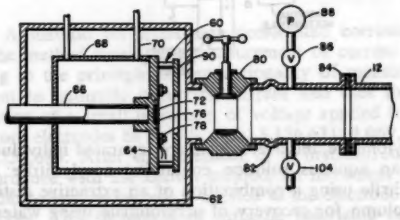
Apparatus for disintegrating coagulated fibrous material comprising a chamber, a stirring means therein including a first and second group of parallel spaced stirring bars, a first rotatable shaft, means for mounting the first group of stirring bars for rotation in parallel relation to each other and in parallel relation about the axis of said first shaft, a second rotatable shaft coaxial with said first shaft, means for mounting the second group of stirring bars for rotation in parallel relation to each other and in parallel relation about the axis of said second shaft, and means for rotating said shafts in opposite directions.

3,694,313

PRODUCTION OF HIGH PURITY ^{123}I

James W. Blue, Bay Village, Wayne R. Smith, Columbia Station, and Vincent J. Sodd, Cincinnati, Ohio, assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Oct. 2, 1969, Ser. No. 863,280
Int. Cl. G21g *1/00*
U.S. Cl. 176—11 1 Claim



Bombarding a tellurium target with a beam from an accelerator produces ^{123}Xe which is carried away by a flowing gas stream. Contaminants are removed from the gas, and the remaining xenon decays to ^{123}I which is ready for use as a radiopharmaceutical in which low radiation exposure is desired as in diagnostic studies.

3,694,314

PROCESS FOR ISOMERIZING GLUCOSE TO FRUCTOSE

Norman E. Lloyd, Leonard T. Lewis, Robert M. Logan, and Dilip N. Patel, Clinton, Iowa, assignors to Standard Brands Incorporated, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 55,996, July 17, 1970. This application Nov. 9, 1970, Ser. No. 88,187
Int. Cl. C12k *9/00*
U.S. Cl. 195—31 F 14 Claims

Process of enzymatically converting glucose to fructose wherein a glucose-containing solution is passed, under specific conditions, through a bed of cells of microorganisms containing cell bound glucose isomerase, said bed has a depth to width ratio of less than about 2.

3,694,315

METHOD FOR PROCESSING PAPAW LATEX (PAPAYA) TO OBTAIN PAPAIN

Roger L. Boudart, 45 Avenue d'Italie, Ixelles, Belgium

Filed Nov. 4, 1968, Ser. No. 773,238
Claims priority, application Great Britain, Nov. 10, 1967, 51,232/67
Int. Cl. C07g *7/022*
U.S. Cl. 195—66 R 12 Claims

A method for processing the fresh latex extracted from the papaw fruit to obtain papain comprising centrifuging the fresh latex to separate it from its natural biochemical and biological impurities, the latex being present after centrifugation in at least two phases, a solid phase and a liquid phase, at least the liquid phase then being further processed in order to obtain powered papain, is disclosed.

3,694,316

PROCESS FOR PREPARING PROTEASE BY MICRO-ORGANISM OF THE BASIDIOMYCETES

Masanobu Kawai and Noboru Mukai, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd.,

Filed Dec. 31, 1969, Ser. No. 889,659
Claims priority, application Japan, Jan. 11, 1969, 44/2,963
Int. Cl. C12d *13/10*
U.S. Cl. 195—66 R 4 Claims

Protease is produced by fermentation of organisms in the class Basidiomycetes. Addition of distillers solubles to the medium improves the yield. Protease having good activity and freedom from undesirable tastes and odors is obtained.

3,694,317

METHOD OF AND INSTRUMENT FOR MICRO-BIOLOGICAL ANALYSIS

Stanley Scher, 970 Contra Costa Drive, El Cerrito, Calif. 94530

Filed May 31, 1968, Ser. No. 733,617
Int. Cl. C12k *1/04*
U.S. Cl. 195—103.5 R 4 Claims

Method of and apparatus for use in distributing, cultivating, treating and investigating microbial materials such as microorganisms and like biological materials. The method includes the steps of introducing into a transparent, flexible plastic tubing in a linear distribution therealong microbial cells suspended within a liquefied agar. The agar is then solidified and the cells cultured to grow colonies from those cells that are viable. The linear distribution of cells or colonies grown therefrom are

then treated as desired and inspected sequentially to monitor the development thereof.

The apparatus includes a reel-type transport mechanism to move the tubing through an inspection station and present the microbial colonies sequentially thereat. An optical sensing system at such station discriminates differences in the optical characteristics of such colonies, and analyzer circuitry responsive to the sensing system provides monitoring information indicative of the detected differences.

3,694,318

SUBSTRATE AND METHOD FOR α-AMYLASE ASSAY

Bernard Klein, 129 Patton Blvd., New Hyde Park, N.Y. 11040, and Ronald Loy Searcy, 68 Norwood Ave., Upper Montclair, N.J. 07043

No Drawing. Continuation-in-part of application Ser. No. 753,748, Aug. 19, 1968. This application Feb. 24, 1969, Ser. No. 801,854

Int. Cl. C12k *1/04*

U.S. Cl. 195—103.5 R **8 Claims**

α-Amylase activity is determined by measuring the color change effected when an insoluble dye-amylose complex is acted upon by the enzyme.

3,694,319

Patent Not Issued For This Number

3,694,320

PROCESS FOR STUDYING THE GROWTH AND PHYSIOLOGY OF BACTERIA AND RECEPTACLE FOR CARRYING OUT THIS PROCESS

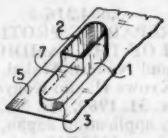
Jean Buissiere, Lyon, France, assignor to Compagnie Generale d'Automatisme, Paris, France

Filed Nov. 18, 1969, Ser. No. 877,751

Claims priority, application France, Nov. 22, 1968, 174,997

Int. Cl. C12b *1/00*

U.S. Cl. 195—144 **4 Claims**



Process for studying the growth and physiology of bacteria, according to which the development of bacteria in aerobic and anaerobic conditions are studied simultaneously, using the same receptacle comprising two communicating parts. Receptable for carrying out the process having a part clearly open to air, forming a cup, in which the bacteria develop in aerobiotic conditions, a covered part communicating with the base of the cup including a protuberance partially separating the two communicating parts and spaced so as to allow an opening between the two parts.

3,694,321

PORTABLE DISTILLATION UNIT

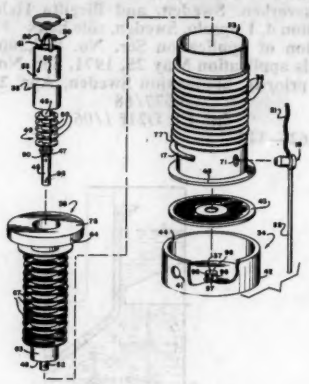
Frank A. Marovich, Hacienda Heights, Jean Bordeaux, Fullerton, and Donald W. Sawtelle, Anaheim, Calif., assignors to the United States of America as represented by the Secretary of the Army

Filed Nov. 3, 1970, Ser. No. 86,579

Int. Cl. B01d *3/00*

U.S. Cl. 202—83 **12 Claims**

A portable stainless steel water distillation unit capable of producing pyrogen-free water in a single distillation. A filtering section permits the use of deionizing resin or activated charcoal. A series of baffles permit the incoming water to be preheated by a portion of the steam. Another series of baffles filter out particulate matters from the steam on its way to the condensation chamber



where it is effectively cooled but isolated from the feed water. The relationship of the elements enables the compact, durable unit to function at maximum thermal efficiency.

3,694,322

METHOD FOR SEPARATING ACRYLONITRILE AND ACETONITRILE BY EXTRACTIVE DISTILLATION WITH COOLANT VAPOR GENERATION

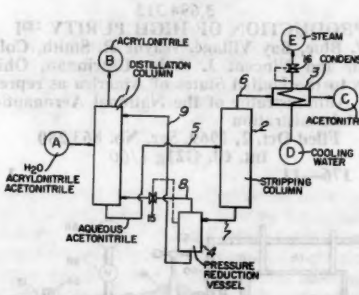
Yoneichi Ikeda, Tsukasa Takeda, Michio Hattori, Yutaka Kiyomiya, and Takashi Yamamoto, Yokohama, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1968, Ser. No. 774,133

Claims priority, application Japan, Nov. 8, 1967, 42/71,839; Apr. 30, 1968, 43/28,555

Int. Cl. B01d *3/40;* **C07c** *121/32*

U.S. Cl. 203—25 **15 Claims**



Acrylonitrile and acetonitrile are separated individually from an aqueous solution containing acrylonitrile and acetonitrile using a combination of an extractive distillation column for recovery of acrylonitrile using water as an extracting agent and a stripping column for recovery of acetonitrile. The distillation of said stripping column is conducted under pressure, so that, at least one portion of overhead vapours evolved from the top of said strip-

ping column may be condensed in a condenser at a temperature high enough to allow the condensation of said vapours to boil the cooling liquid in the condenser. At least one portion of said cooling liquid is thereby recovered as vapours. Further, vapours are recovered by subjecting a liquid withdrawn from said stripping column to pressure reduction to at most approximately atmospheric pressure to generate vapours from the withdrawn liquid.

70 to 90% of steam consumed in the stripping column when operated under atmospheric pressure can be thereby recovered.

3,694,323

SEPARATION OF DISTILLABLE ISOCYANATES FROM THEIR PHOSGENATION MASSES

John Richard Cooper, Hockessin, and Gilbert Thornton Perkins, Landenberg, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 5, 1968, Ser. No. 749,930

Int. Cl. B01d 3/34; C07c 119/04

U.S. Cl. 203—60 12 Claims

Process for recovering an isocyanate in high yield from its phosgenation mass while fluidizing the distillation residue comprising distilling said isocyanate in the presence of an isocyanate exchange agent.

3,694,324

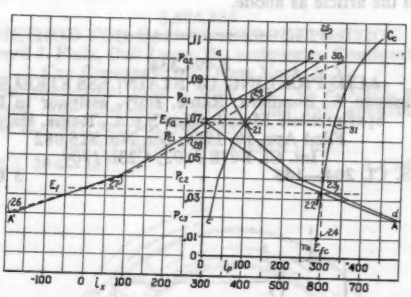
METHOD OF MEASURING ACCELERATED CORROSION RATE

Robert G. Seyl, 1123 Mulford St., Evanston, Ill. 60202

Filed Jan. 16, 1969, Ser. No. 791,653

Int. Cl. G01n 27/46

U.S. Cl. 204—1 T 8 Claims



A method for measuring accelerated corrosion rate. The method uses a first measurement of current according to the principle of proportionality of measured current to naturally occurring current and uses the application of a small increment of voltage applied to one or more electrodes as in U.S. Pats. 3,156,631; 3,069,332 and 3,250,689. After measurement of a first current in accordance with the known method, an increment of cathodic polarizing current is applied to the electrode or electrodes. This increment of cathodic polarizing current is varied over a range. The rate determining corrosion current is then determined by the relationship between the first measured current and the minimum current measured in said range.

3,694,325

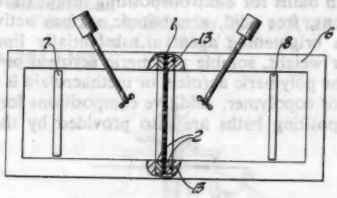
PROCESS FOR UNIFORMLY ELECTROFORMING INTRICATE THREE-DIMENSIONAL SUBSTRATES

Seymour Katz and Joseph L. Greene, Royal Oak, Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of application Ser. No. 724,544, Apr. 26, 1968. This application June 21, 1971, Ser. No. 155,160

Int. Cl. C23b 7/00, 5/60; C23f 17/00

U.S. Cl. 204—11 2 Claims



A process for making a substantially homogeneous, intricate, three-dimensional, reticulated electroform particularly an open cell metal foam.

3,694,326

PRETREATMENT OF STAINLESS STEEL FOR ELECTROPLATING

Richard W. McCabe, Freeport, and Mark J. Johnson, Natrona Heights, Pa., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Nov. 3, 1969, Ser. No. 873,227

Int. Cl. C23b 5/62

U.S. Cl. 204—29 5 Claims

An improved method of electroplating stainless steel with a dissimilar metal. It encompasses an electrolytic treatment which is performed in an alkaline electrolyte at a current density of between 0.025 amp per square inch and 3 amps per square inch with the stainless steel serving as anode and then as cathode.

3,694,327

Patent Not Issued For This Number

3,694,328

COMPOSITION AND PROCESS FOR CHROMIUM PLATING

Donald H. Becking, Birmingham, Mich., assignor to Udylite Corporation, Warren, Mich.

No Drawing. Filed Aug. 24, 1970, Ser. No. 66,640

Int. Cl. C23b 5/06

U.S. Cl. 204—51 12 Claims

A composition and process for the electrodeposition of chromium from aqueous acidic hexavalent chromium solutions which contain sulfate ions and saturation concentrations of certain rare earth phosphofluorides. By the use of the phosphofluorides of these rare earths, a self-

regulating chrome plating bath is produced having a higher fluoride ion content than has heretofore been possible. This is particularly desirable in the production of hard chrome plate, in that improved color of the plate is obtained.

3,694,329
BRIGHT TIN ELECTRODEPOSITING
Marcis M. Kampe, Brookline, Mass., assignor to Enthone, Incorporated, New Haven, Conn.
No Drawing. Filed July 30, 1970, Ser. No. 59,749
Int. Cl. C23b *5/14*
U.S. Cl. 204—54 R **23 Claims**

Acid tin baths for electrodepositing bright tin comprising tin ions, free acid, a non-ionic surface active agent and as a brightening agent a substantially linear, low molecular weight, soluble polymeric acrolein or methacrolein. The polymeric acrolein or methacrolein is a homopolymer or copolymer. Additive compositions for acid tin electrodepositing baths are also provided by the invention.

3,694,330
ELECTROPLATING BATH FOR DEPOSITING BRIGHT ZINC PLATES
Joachim Korpium, 54 Oberbohringer Strasse, and Joachim Steeg, 47 Schultheiss-Schneider-Strasse, both of 734 Geislingen, Germany
No Drawing. Filed May 23, 1967, Ser. No. 640,512
Int. Cl. C23b *5/12, 5/46*
U.S. Cl. 204—55 R **16 Claims**

Semi-bright to fully bright zinc deposits are produced by electroplating articles in an acid electroplating bath containing a non-complex zinc salt and, as brightening and the throwing power increasing additives, an aromatic carbonyl compound, a non-ionogenic, surface active polyoxyethylene compound, and/or a compound selected from the group consisting of ammonium chloride and a compound forming a soluble complex compound with zinc salts within the pH-range between about 2.5 and about 5.5.

Electroplating with such baths is preferably effected at a pH between about 2.5 and about 5.5, a temperature between about 10° C. and about 30° C., and a current density between about 1 amp/sq. dm. and about 5 amp/sq. dm.

The baths are able to replace the heretofore used alkaline electroplating zinc baths and are substantially free of the disadvantages of said baths, especially the difficulties encountered in waste disposal.

3,694,331
CORROSION RESISTANT BERYLLIUM BODIES
Louis J. Csontos, Parma, and Albert James Stonehouse, Lyndhurst, Ohio, assignors to Brush Beryllium Company, Cleveland, Ohio
No Drawing. Continuation of application Ser. No. 670,486, Aug. 11, 1967, which is a division of application Ser. No. 395,012, Sept. 8, 1964. This application Mar. 6, 1970, Ser. No. 7,418
Int. Cl. C23b *9/00*
U.S. Cl. 204—56 R **1 Claim**

1. A beryllium body having an electrolytically deposited crystalline beryllium oxide coating adherent to the body surface produced by immersing the uncoated body in a bath consisting essentially of water, sodium chromate in an amount at least 0.4%, by weight, of the bath, and an amount of chromic acid sufficient to adjust the pH of the bath into a range from about 5.5 to about 7.5, the temperature of the said bath being below about 130° F., and passing an electric current to the surface with the surface connected as an anode.

3,694,332
ELECTROLYTIC REDUCTION OF HALOGENATED PYRIDINES
Vernon D. Parker, Lawrence, Kans., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Mar. 5, 1971, Ser. No. 121,562
Int. Cl. C07b *29/06;* C08d *31/46, 31/26*
U.S. Cl. 204—73 R **4 Claims**

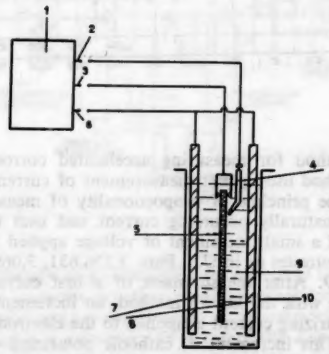
Halogenated pyridines of the formula

wherein each X is Cl or Br, and each Y is X or CN are electrolytically reduced to replace the halogen in the 4 position with hydrogen.

3,694,333
TREATMENT OF ARTICLES HAVING METALLIC CORE WITH BORON COATING
Alain Jean Edmond Ducrot, l'Haye-les-Roses, Jacques Constant Poulain, Thionville, Miguel Sancho Pavon, Gouvieux, and Michel Louis Turpin, Bourg la Reine, France, assignors to Societe Nationale d'Etude et de Construction DeMoteurs d'Aviation, Paris, France, and Association pour la Recherche et le Developpement des Methods et Processur Industriels A.R.M.I.N.E.S., Paris, France
No Drawing. Continuation-in-part of abandoned application Ser. No. 881,875, Dec. 3, 1969. This application Nov. 18, 1971, Ser. No. 200,144
Claims priority, application France, Dec. 5, 1968, 176,867
Int. Cl. C23b *1/00, 3/06*
U.S. Cl. 204—140 **5 Claims**

The mechanical properties, particularly the tensile strength, of articles comprising a layer of boron on a metallic, particularly tungsten, core are substantially improved by a treatment comprising immersion in an aqueous acid bath containing hydrogen peroxide and application of a potential difference between a metallic cathode and the article as anode.

3,694,334
ACID PICKLING OF STAINLESS STEELS
Giuseppe A. Bombara, Rome, Italy, assignor to Centro Sperimentale Metallurgico S.p.A., Rome, Italy
Filed Apr. 10, 1969, Ser. No. 815,082
Int. Cl. B01k *3/02;* C23b *1/04*
U.S. Cl. 204—145 **3 Claims**



A process for electrostatically pickling stainless steel having a chromium-depleted layer beneath the scale formed during hot-rolling.

3,694,335

CHROMATOGRAPHIC SEPARATION

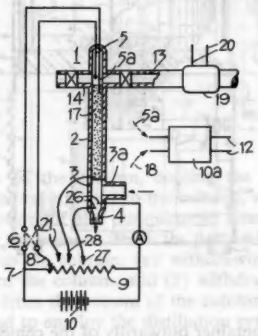
Victor Pretorius, Klein Waterkloof, Club Ave., Waterkloof, Pretoria, Transvaal, Republic of South Africa, and Hans Helmuth Hahn, 38 Marais St., Bailey's Muckleneuk, Pretoria, Transvaal, Republic of South Africa

Application Aug. 2, 1967, Ser. No. 657,815, which is a continuation-in-part of applications Ser. No. 583,788, Oct. 3, 1966, now Patent No. 3,594,294, and Ser. No. 598,365, Dec. 1, 1966. Divided and this application Apr. 2, 1970, Ser. No. 29,353

Claims priority, application Republic of South Africa, Oct. 10, 1965, 65/5,409; Dec. 8, 1965, 65/6,633; Aug. 2, 1966, 66/4,568

Int. Cl. B01k *5/00*

U.S. Cl. 204—180 G 10 Claims



Retention of solutes on the retarding phase is induced by applying to the entire retarding phase an electrical potential, either uniformly or with a gradient. The potential may be DC or AC. In the latter case additional separation effects are attainable. The AC pulse shape, frequency and amplitude is adjusted with a pulse generator.

3,694,336

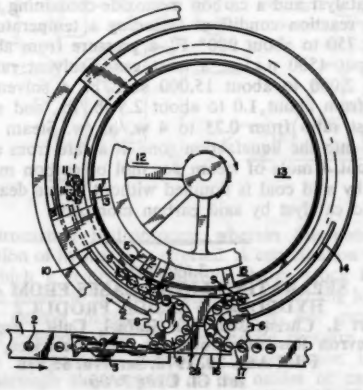
METHOD FOR CAN ELECTRODEPOSITION

Edward J. Fiala, Oak Lawn, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Original application June 2, 1969, Ser. No. 829,412, now Patent No. 3,647,675. Divided and this application May 26, 1971, Ser. No. 147,003

Int. Cl. B01k *5/02*; C23b *13/00*

U.S. Cl. 204—181 3 Claims



A method for automatic electrodeposition which electrodeposits a coating onto a can body. The can body is passed along a ring-shaped trough which is filled with coating solution and an electric potential is applied between the solution and the can body to deposit a coating onto the can body. The can body is dipped into the trough and is moved along in the trough a distance sufficient to allow the desired amount of coating to cover the inside and outside of the can body.

3,694,337

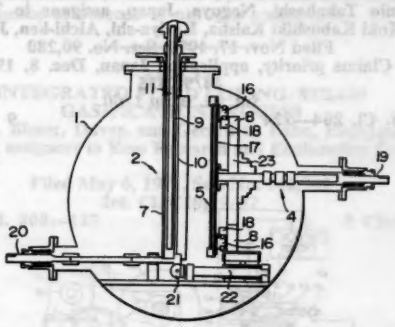
SPUTTERING METHOD FOR MANUFACTURING TRANSPARENT, HEAT RAY REFLECTING GLASS

Akira Kushihashi, Nishinomiya, and Seiichiro Manabe, Itami, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Jan. 4, 1971, Ser. No. 103,716

Int. Cl. C23c *15/00*

U.S. Cl. 204—192 1 Claim



A transparent, heat ray reflecting glass article comprising a glass sheet on at least one surface of which a heat ray reflecting coating is formed, said heat ray reflecting coating comprising a first layer consisting essentially of a copper-nickel alloy containing 5–15% by weight of nickel, and a second layer composed of an oxide of said alloy, which is tightly bonded on said first layer, and a process for preparation of the same.

3,694,338

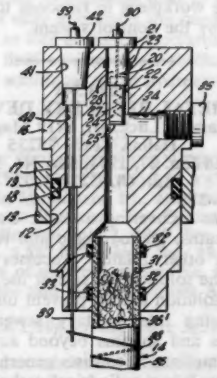
CHEMICAL DETECTOR

Irving R. Weingarten, Bronx, N.Y., assignor to Cambridge Instrument Company, Inc., Ossining, N.Y.

Filed Apr. 14, 1970, Ser. No. 28,433

Int. Cl. B01r *3/00*; G01n *27/00*

U.S. Cl. 204—195 R 10 Claims



A detector for reducing and oxidizing agents carried by fluids which detector includes an electrolyte, a replace-

able first half cell structure containing a metal and a metal salt immersed in said electrolyte and a second half cell structure having an exposed porous member saturated with said electrolyte and an electrode on the outer side of said porous member, the porous member and electrode upon being individually placed in the path of the fluid will cause a potential to be developed between the electrodes which is proportional to the amount of chemical in said fluid. The detector is especially useful for the detection of hydrazine in boiler feed water.

3,694,339

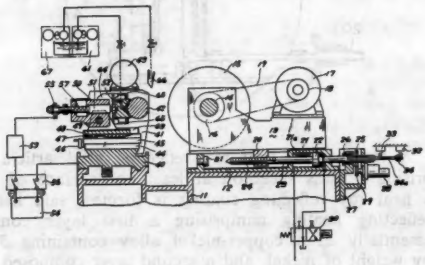
Patent Not Issued For This Number

3,694,340

ELECTROLYTIC GRINDING MACHINE

Kunio Takahashi, Nagoya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Nov. 17, 1970, Ser. No. 90,280
Claims priority, application Japan, Dec. 8, 1969, 44/98,535
Int. Cl. B23p *1/00*
U.S. Cl. 204—224 **9 Claims**



An electrolytic grinding machine having a grinding wheel comprises an electrolytic grinding device, means for detecting the electrolytic grinding current and a control system for controlling the speed at which the grinding wheel head is advanced toward a workpiece. The workpiece is ordinarily ground by the electrolytic grinding device. However, when the electrolytic grinding current becomes smaller than a predetermined current such that the grinding efficiency decreases, a conventional grinding operation by the grinding wheel is automatically applied on the workpiece in response to a command signal provided by the control system.

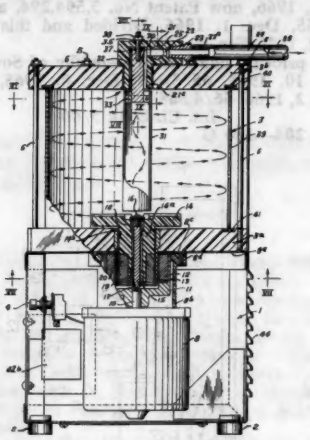
3,694,341

METAL RECOVERY DEVICE

William R. Luck, Jr., 6419 Maple Ave., Dallas, Tex. 75235

Filed Jan. 27, 1971, Ser. No. 110,181
Int. Cl. C22d *1/02*
U.S. Cl. 204—273 **12 Claims**

A device for recovering metallic elements from plating solution baths, photographic and radiographic fixing solutions and other related processes to recover such metals from the solution for sale or use, to permit the reuse of fixing solution and to prevent undesirable metallic elements passing into sanitary sewers, contaminating water supplies and streams beyond acceptable levels of human consumption. It consists generally of a container whose outer wall is a cylindrical cathode and having an anode suspended centrally thereof. Electrical current is passed between the anode and the cathode through the liquid causing silver or other metallic material in solution in the fluid passed through the container to be deposited on the cathode by electrolysis. An impeller is disposed centrally and interiorly of the bottom of the container which is driven by an external motor through a magnetic drive. Fluid is admitted centrally of the upper wall of the container and discharged through the upper



wall of the container outwardly of the center thereof. The impeller draws fluid through the central passage which is at lower pressure and the fluid is discharged through the outer passage which is at higher pressure, thereby eliminating the necessity of a pump to circulate the fluid therethrough. Although the device is primarily designed for recovery of silver from photographic fixer liquid, it may be employed to remove metal from other liquid.

3,694,342

CATALYTIC LIQUEFACTION OF COAL USING SYNTHESIS GAS

Frank B. Sprow and John E. Keller, Baytown, Tex., assignors to Esso Research and Engineering Company

No Drawing. Filed Oct. 26, 1970, Ser. No. 84,127
Int. Cl. C10g *1/06*
U.S. Cl. 208—10 **4 Claims**

The liquefaction of coal in a hydrogen donor solvent is carried out in the presence of a carbon monoxide sensitive catalyst and a carbon monoxide-containing treat gas under reaction conditions including a temperature from about 750 to about 900° F., a pressure from about 500 to about 4500 p.s.i.g., a treat gas-to-solvent ratio from about 2,000 to about 15,000 s.c.f./b., a solvent-to-coal ratio from about 1.0 to about 2.5 lb./lb., and a slurry/catalyst ratio from 0.25 to 4 w./hr./w. Steam is introduced into the liquefaction zone at a rate from aboout 1 to about 4 mols of steam per mol of carbon monoxide, whereby said coal is liquified without undue deactivation of said catalyst by said carbon monoxide.

3,694,343

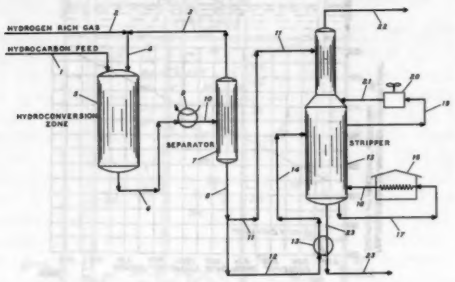
SEPARATING LIGHT GASES FROM A HYDROCONVERSION PRODUCT

Robert I. Christensen, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 20, 1970, Ser. No. 65,570
Int. Cl. C10g *7/00*
U.S. Cl. 208—100 **11 Claims**

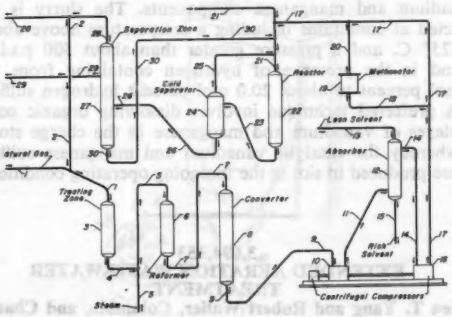
A process for separating light gases from heavier hydrocarbons which comprises: (a) feeding a first portion

of a mixture of the light gases and heavier hydrocarbons at a first temperature to a fractionation column near a midpoint along the length of the column, (b) applying heat to the material in the column near the bottom of the column, (c) feeding a relatively cold second portion of the mixture, having a temperature at least 50° F. below the first temperature, to the column near the top of the column, (d) withdrawing a pumparound stream from an



upper portion of the column, cooling the pumparound stream and then returning it to the column, with the withdrawal and return of the pumparound stream being located between the point at which the first and second mixtures are fed to the column, (e) withdrawing light gases from the top of the column, and (f) withdrawing heavier hydrocarbons from the bottom of the column. It is particularly preferred to employ the distillation process in combination with jet fuel hydrogenation.

3,694,344
HYDROPROCESSING OF HYDROCARBONS
William H. Munro, Deerfield, Ill.
(30 Algonquin Road, Des Plaines, Ill. 60016)
Continuation-in-part of application Ser. No. 774,378, Nov. 8, 1968. This application Sept. 24, 1970, Ser. No. 74,518
Int. Cl. C10g *13/00;* **C01b** *1/33, 2/18*
U.S. Cl. 208—108 **5 Claims**

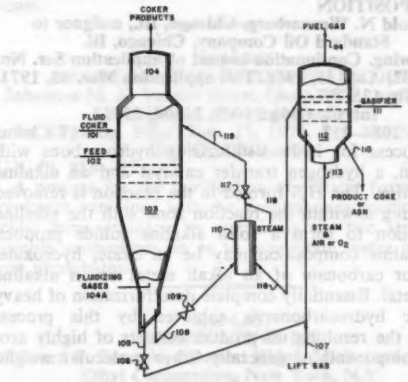


A hydrocarbon hydroprocess wherein the chemical consumption of hydrogen is effected. A combination process in which a hydrocarbonaceous charge stock is reacted with steam to produce an effluent containing hydrogen and carbon oxides. The relatively low pressure effluent is compressed to an intermediate pressure level, at which pressure the hydrogen concentration is increased through the removal of the oxides of carbon. The purified hydrogen stream is then compressed to a higher pressure level and introduced into the hydroprocessing reaction zone. Specific hydroprocesses are directed toward the hydrogenation of aromatic nuclei, hydrocracking, the ring-opening of cyclic hydrocarbons for producing jet fuel components, desulfurization, denitrification and hydrogenation.

3,694,345
NICKEL-CONTAINING CRYSTALLINE ALUMINOSILICATE CATALYST AND HYDROCRACKING PROCESS
Clarence W. Bittner, Orinda, Calif., assignor to Shell Oil Company, New York, N.Y.
No Drawing. Filed Dec. 29, 1969, Ser. No. 888,826
Int. Cl. C10g *13/02*
U.S. Cl. 208—111 **6 Claims**

An improved hydrocracking catalyst is prepared by incorporating 15–30% w. nickel and 0.05–6% w. Group VI–B metal into a crystalline alumino-silicate zeolite base. This catalyst may be used in a hydrocracking process in the presence or absence of nitrogen compounds.

3,694,346
INTEGRATED FLUID COKING/STEAM GASIFICATION PROCESS
Don E. Blaser, Dover, and Gerard C. Lahn, Parsippany, N.J., assignors to Esso Research and Engineering Company
Filed May 6, 1971, Ser. No. 140,702
Int. Cl. C10g *9/32*
U.S. Cl. 208—127 **5 Claims**



The mixing of hot gasifier coke and cold reactor coke in a dense phase riser to exchange heat to be used in the coking reactor not only eliminates the need for the separate heater vessel, as well as high temperature slide valves, in a conventional fluid coking/steam gasification process, but also results in additional coker hydrocarbon products.

3,694,347
HYDROCARBON ISOMERIZATION PROCESS WITH A RHENIUM-TIN CATALYST
Richard E. Rausch, Mundelein, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Application July 2, 1969, Ser. No. 838,683, now Patent No. 3,557,022, dated Jan. 19, 1971, which is a continuation of application Ser. No. 825,084, May 15, 1969. Divided and this application Apr. 23, 1970, Ser. No. 31,402
Int. Cl. C10g *35/06;* **C07c** *5/30*
U.S. Cl. 208—134 **16 Claims**

Isomerizable hydrocarbons are isomerized using a catalytic composite comprising a combination of a tin component and a rhenium component with a porous carrier material.

3,694,348

PROCESS FOR THE AROMATIZATION OF HYDROCARBONS

Natalia Robertovna Bursian, Moskovskoe shosse 6, kv. 143; Samson Borisovich Kogan, Vasiliebsky ostrov, 10 linia 47, kv. 2; and Zinaida Arkadievna Davydova, Prospekt Obukhovskoi oborony 93, kv. 26, all of Leningrad, U.S.S.R.

No Drawing. Filed Sept. 15, 1969, Ser. No. 858,150
Int. Cl. C10g *35/08*
U.S. Cl. 208—138 8 Claims

Aromatization of hydrocarbons, such as straight-run gasoline fractions, is effected by passing the hydrocarbons at a temperature of 400–550° C. and a pressure of up to 20 atm. over a platinum alumina catalyst containing 0.1 to 5% by weight of palladium and 0.1 to 5% by weight of at least one element from the scandium subgroup of Group III or the zirconium subgroup of Group IV of the Periodic Table of Elements. A mixture of an element from the scandium sub group and of the zirconium subgroup is particularly effective, e.g. cerium and zirconium.

3,694,349

Patent Not Issued For This Number

3,694,350

HYDRODESULFURIZATION WITH A HYDROGEN TRANSFER CATALYST AND AN ALKALINE COMPOSITION

Arnold N. Wennerberg, Chicago, Ill., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 752,782, Aug. 15, 1968. This application Mar. 18, 1971, Ser. No. 125,797
Int. Cl. C10g *23/02, 23/04, 23/12*
U.S. Cl. 208—212 17 Claims

A process for hydrodesulfurizing hydrocarbons with hydrogen, a hydrogen transfer catalyst and an alkaline composition. The H_2S formed in the reaction is removed by reacting it within the reaction zone with the alkaline composition to form a solid alkaline sulfide product. The alkaline composition may be an oxide, hydroxide, sulfide or carbonate of an alkali metal or an alkaline earth metal. Essentially complete desulfurization of heavy asphaltic hydrocarbons is achieved by this process wherein the resulting oil product consists of highly aromatic components of generally lower molecular weight.

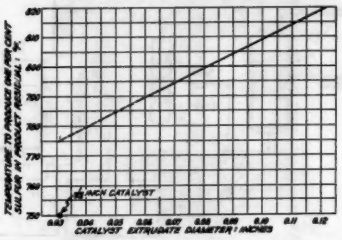
3,694,351

CATALYTIC PROCESS INCLUDING CONTINUOUS CATALYST INJECTION WITHOUT CATALYST REMOVAL

Bradford C. White, Pittsburgh, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Mar. 6, 1970, Ser. No. 17,064
Int. Cl. C10g *23/02*
U.S. Cl. 208—213 5 Claims

The hydrodesulfurization of a crude oil or a reduced crude containing the asphaltene fraction proceeds at unexpectedly low temperatures by utilizing a catalyst comprising a Group VI and Group VIII metal on alumina wherein the catalyst particles are very small and have a diameter between about 1/20 and 1/40 inches, and the feed is passed in downflow operation over a fixed bed of the catalyst. The low temperature advantage depends upon high hydrogen pressure and the process is pressure drop-limited rather than catalyst activity limited. The present invention presents a two pronged attack on pressure drop. First, plugging at the top of the catalyst bed and coincident increase in pressure drop is prevented by starting the reaction with only a portion of the total catalyst required for a full cycle and injecting fresh catalyst to the top of the catalyst bed while the reaction is in progress without removing any catalyst from the process. Furthermore, disregarding plugging, pressure drop due to the small particle size of the catalyst is retarded since the total catalyst load is not introduced until the catalyst cycle is near an end. In this manner, the smallest amount of catalyst is present when the catalyst is most active and



the greatest amount of catalyst is not present until the catalyst is least active. This invention can be applied to other fixed bed processes wherein fouling at the top of the bed or pressure drop represents a process limitation and wherein freshly injected catalyst can perform as a filtering medium in addition to performing a catalytic function.

3,694,352

SLURRY HYDROREFINING OF BLACK OILS WITH MIXED VANADIUM AND MANGANESE SULFIDES

William T. Gleim, Island Lake, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Feb. 24, 1970, Ser. No. 13,837
Int. Cl. C10g *23/02*
U.S. Cl. 208—215 3 Claims

A catalytic slurry process for hydrorefining a hydrocarbonaceous charge stock containing hydrocarbon-insoluble asphaltenes. The process is effected in slurry fashion with the charge stock being admixed with vanadium and manganese components. The slurry is reacted at conditions including a temperature above about 225° C. and a pressure greater than about 500 p.s.i.g., and in the presence of hydrogen containing from 1.0 mol percent to about 20.0 mol percent hydrogen sulfide. A preferred technique involves dissolving organic complexes of vanadium and manganese in the charge stock, whereby the catalytic vanadium and manganese sulfides are produced in situ at the foregoing operating conditions.

3,694,353

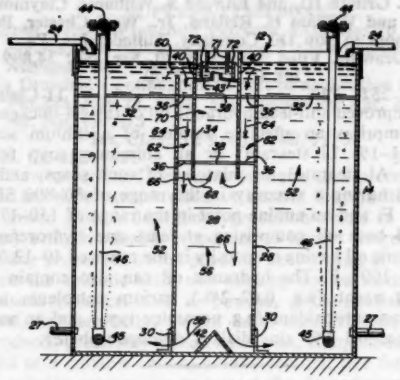
EXTENDED AERATION WASTEWATER TREATMENT

Jen T. Yang and Robert Waller, Columbia, and Charles W. Mallory, Severna Park, Md., assignors to Hittman Associates, Inc., Columbia, Md.

Continuation-in-part of application Ser. No. 98,843, Dec. 16, 1970. This application Nov. 3, 1971, Ser. No. 195,389
Int. Cl. C02c *1/12*
U.S. Cl. 210—7 28 Claims

An improved extended aeration process is carried out in a single tank. Wastes are aerated for periods ranging from 12 to 24 hours and are circulated in the tank in a controlled manner to avoid settling and compaction. The concentration of mixed liquor is maintained by the selective removal of clarified effluent. In this manner, the necessity for providing quiescent zones for the settling

of solids and for returning compacted sludge to the aeration process is eliminated. The inventive apparatus is of modular construction, avoids the problems associated



with sludge compaction and in the preferred form is capable of being fabricated from planer elements either as a complete unit or internals for installation in other types of tankage.

3,694,354

METHOD FOR TREATING SEWAGE

Albert C. Nolte, Jr., Oyster Bay Cove, N.Y., assignor to Elton Industries Corporation, Jericho, N.Y.

Original application May 15, 1969, Ser. No. 824,999, now Patent No. 3,604,021. Divided and this application Apr. 6, 1971, Ser. No. 131,785

Int. Cl. C02c *1/02*

U.S. Cl. 210—18 4 Claims

A tablet for use in a toilet, urinal or the like which has an ingredient a substance for increasing the decompositional rate of the waste material in a cesspool sewage system or the like.

3,694,355

PROCESS FOR THE REMOVAL OF SOLID PARTICLES FROM AQUEOUS SUSPENSIONS

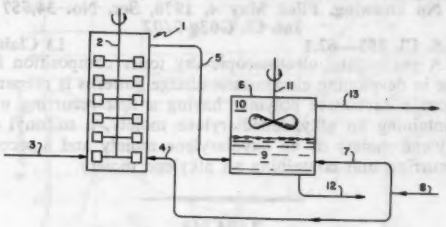
Pieter Visser, Amsterdam, and Leonard W. Ter Haar, The Hague, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Sept. 16, 1970, Ser. No. 72,741

Claims priority, application Netherlands, Oct. 14, 1969, 6915491

Int. Cl. B01d *11/02*

U.S. Cl. 210—21 4 Claims



Solid particles such as soot are removed from aqueous suspensions by a two step process, the first step being to agglomerate the particles by contacting them with gentle agitation with a water-immiscible liquid, and then to contact the agglomerate-containing aqueous phase with a continuous phase that is water immiscible under conditions such that the agglomerates enter the non-aqueous phase.

3,694,356

ABATEMENT OF WATER POLLUTION

Johannes M. A. Vander Horst, Olean, N.Y., assignor to the United States of America

No Drawing. Filed Mar. 17, 1971, Ser. No. 95,899

Int. Cl. C02b *1/20*

U.S. Cl. 210—47 4 Claims

A process for the purification of effluent from sewage treatment combined with the simultaneous purification of acidic mine drainage by combining the two streams in suitable proportions so as to precipitate water insoluble iron phosphates.

3,694,357

LUBRICATING OIL

Edward F. Zaweski, Pleasant Ridge, Mich., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Apr. 19, 1971, Ser. No. 135,418

Int. Cl. C10m *1/38*

U.S. Cl. 252—48.2 5 Claims

Reaction of hydrogen sulfide with the hemi-quinone of a methylene bisphenol results in a tetranuclear phenol in which two molecules of the methylene bisphenol are bridged at their methylene groups through a sulfur atom. These are thiodimethylidyne tetrakisphenols. The compounds are useful as antioxidants in synthetic and mineral lubricating oil.

3,694,358

HYDROCARBON OR SILICONE LUBRICATING OIL CONTAINING DIHALOGENOETHYL SUBSTITUTED ORGANOSILICON COMPOUNDS

Edgar D. Brown, Jr., Schenectady, N.Y., assignor to General Electric Company

No Drawing. Original application Sept. 11, 1967, Ser. No. 666,946, now Patent No. 3,555,062, dated Dec. 22, 1970. Divided and this application May 11, 1970, Ser. No. 48,717

Int. Cl. C10m *1/50*

U.S. Cl. 252—49.6 4 Claims

Mixtures of dihalogenoethyl-substituted organosilicon compositions have been prepared by adding either IBr or

ICl to vinyl-substituted silanes and siloxanes. Lubricating compositions of extreme pressure and high temperature characteristics are prepared by adding the mixtures to oils of lubricating viscosity. The lubricating compositions are especially useful for lubricating high temperature alloys.

3,694,359
DRY ELECTROSCOPIC TONER COMPOSITIONS
Stewart H. Merrill and James R. Olson, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed May 4, 1970, Ser. No. 34,557
Int. Cl. G03g *9/02*
U.S. Cl. 252—62.1 **13 Claims**

A particulate, electroscopic dry toner composition for use in developing electrostatic charge patterns is prepared from a carbonate polymer having a first recurring unit containing an alkylidenediarylene moiety, a sulfonyl diarylene moiety or an oxydiarylene moiety and a second recurring unit containing an alkylene moiety.

3,694,360
FERRIMAGNETIC GLASS-CERAMICS
Edward A. Weaver, Toledo, Ohio, assignor to Owens-Illinois, Inc.
No Drawing. Filed Aug. 12, 1971, Ser. No. 171,345
Int. Cl. C04b *35/26;* **C03c** *3/04*
U.S. Cl. 252—62.59 **12 Claims**

Ferrimagnetic glass-ceramics prepared from thermally and spontaneously crystallizable compositions based on a simple ternary glass system Fe_2O_3-Li_2O-SiO_2, wherein the predominant crystalline phase is lithium ferrite ($LiFe_5O_8$). The addition of minor amounts of modifiers or nucleants, such as ZnO, to the basic ternary composition of this invention provides a greater degree of control over the crystallization of the thermally crystallizable compositions and further enhances the development and growth of ferrite crystals and the magnetic properties of the ferrites. The glass-ceramics prepared from the simple glass systems and by the methods of this invention have magnetic properties which make them useful in the manufacture of computer memory cores, radio coils, pulse transformers and other assorted electronic devices which are designed to operate at microwave frequencies.

3,694,361
LITHIUM TITANIUM BISMUTH COBALT FERRITES
Jan Smit, Palos Verdes, Paul David Baba, San Carlos, and Giltan Michael Argentina, Belmont, Calif., assignors to Ampex Corporation, Redwood City, Calif.
Filed Sept. 7, 1971, Ser. No. 178,057
Int. Cl. C04b *35/26*
U.S. Cl. 252—62.59 **3 Claims**

Microwave ferrites with high power handling capability, narrow resonance linewidths, good temperature performance, low losses, low costs, and rectangular hysteresis loops are made from a lithium-titanium-bismuth ferrite containing a small amount of cobalt. In addition, small amounts of zinc or manganese can be present in the ferrites.

3,694,362
AZEOTROPIC COMPOSITION
Joseph A. Florio, Pennnsville, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed July 2, 1970, Ser. No. 52,119
Int. Cl. C09k *3/02*
U.S. Cl. 252—67 **2 Claims**

An azeotropic composition, useful in the distillative separation of mixtures of dichlorodifluoromethane and chlorine, for extracting heat from articles and for reducing microorganism populations of articles, especially foods, consisting of, on a weight basis, 27 to 37% dichlorodifluoromethane and 73 to 63% chlorine and having a boiling point of −37.6 to −37.5° C. at 754 mm. Hg pressure.

3,694,363
HYDRAULIC OIL COMPOSITION
John Q. Griffith III, and Edward S. Williams, Claymont, Del., and William H. Reiland, Jr., West Chester, Pa., assignors to Sun Oil Company, Philadelphia, Pa.
No Drawing. Filed May 5, 1970, Ser. No. 34,899
Int. Cl. C09k *3/00*
U.S. Cl. 252—72 **11 Claims**

An improved anti-leak hydraulic oil of the gel-thickened type comprises an effective amount of a lithium soap (e.g. 0.1–1% Li stearate) or an aluminum soap (e.g. 0.5–2% Al stearate), or mixtures of such soaps, and a base oil having a viscosity in the range of 80–800 SUS at 100° F. and an aniline point in the range of 150–170° F., said base oil comprising at least one hydrorefined naphthenic oil having a viscosity in the range of 40–12,000 SUS at 100° F. The hydraulic oil can also contain an anti-rust agent (e.g. 0.02–2%) barium petroleum sulfonate, an anti-oxidant (e.g. an amine type) and an anti-wear (e.g. 0.1–5% zinc dialkyl dithiophosphate).

3,694,364
LAUNDERING AID
James B. Edwards, Cincinnati, Ohio, assignor to The Procter & Gable Company, Cincinnati, Ohio
No Drawing. Filed Dec. 28, 1970, Ser. No. 102,200
Int. Cl. C11d *17/04*
U.S. Cl. 252—90 **11 Claims**

A laundering aid comprising an amine-coated modified cellulosic substrate in combination with a detergent, said aid providing a means of introducing a detergent into a washing solution and at the same time serving to adsorb dirt and vagrant anionic dyes from the aqueous media, thereby providing an improved laundering process.

3,694,365
COMPOSITIONS FOR CLEANING AND STERILIZING MILK EQUIPMENT
Charles S. Castner, Reading, Pa., assignor to Schuyler Development Corporation
No Drawing. Filed Dec. 21, 1970, Ser. No. 100,537
Int. Cl. C11d *3/04, 3/48*
U.S. Cl. 252—106 **4 Claims**

A composition is provided for cleaning and sterilizing milk equipment and the like. The composition is a concentrate for dilution in water and consists of:

	Percent
Isopropanol	20–30
Hexylene glycol	10–15
Ethylene glycol monomethyl ether	5–10
Amonium chloride	2–5
Disodium tetraborate	3–7
Isooctylphenoxy polyethoxyethanol	2–7
Diethylene glycol monoethyl ether	1–4
Alkali metal hydroxide	1–2
Ammonia	2–5
C_9–C_{15} alkyl tolylmethyl trimethyl ammonium chloride	11–22
Eethylene diamine tetra acetate	0.25–1
Water	Balance

3,694,366
DETERGENT SOLUTIONS
Colin Harris, Alderley Edge, and Eric Richard Meacham, Sale, England, assignors to Hough, Hoseason & Company Limited, Levenshulme, Manchester, England
No Drawing. Filed Dec. 28, 1970, Ser. No. 102,119
Int. Cl. C11d *3/48, 3/26*
U.S. Cl. 252—106 **4 Claims**

The disinfecting activity of chlorhexidine or derivatives thereof when used in a detergent solution containing a

betaine is maintained by adding urea or a derivative thereof to the detergent/disinfectant solution.

3,694,367
SUPERFATTED SOAP
Alfred Peters, Francisco Petrarca 133, Mexico City 5, Mexico, and Salvador Morelos, Calle Cuauhtemoc 57, Atzcapotzalco, Mexico City 16, Mexico
No Drawing. Continuation-in-part of application Ser. No. 746,243, July 22, 1968. This application Apr. 23, 1971, Ser. No. 137,073
Int. Cl. C11d *9/46, 9/48, 11/04*
U.S. Cl. 252—121 5 Claims

New superfatted detergent products and processes for making them are provided. A neutral soap in fluid state is mixed with a detergent-type sulfonic acid to liberate fatty acids in suitable proportion to impart desired superfatting properties to the product, neutralizing at the same time the sulfonic acid, and working up the mixture into finished products such as powder, granules, flakes, ribbons, and preferably milled toilet bars. The superfatted products, preferably milled toilet bars, comprise fatty acid salts of a suitable cation, usually sodium, free fatty acids in suitable proportions to impart the desired superfatting properties to the finished product and a detergent-type sulfonate in the intimate relationship characteristic of in situ formation of the sulfonate by reaction of the sulfonic acid with neutral soap in fluid state. Further novelty of the product and its characteristics are attributable to the difference in the distribution of free fatty acids produced in situ vis-a-vis the distribution of the fatty acids in the neutral soap.

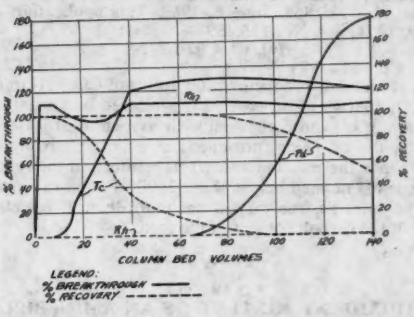
3,694,368
TERNARY AZEOTROPIC COMPOSITIONS
Oliver A. Barton, Florham Park, N.J., and Kevin [illegible] Murphy, Orchard Park, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Feb. 26, 1971, Ser. No. 119,372
Int. Cl. C11d *3/44*
U.S. Cl. 252—171 4 Claims

Certain ternary mixtures of tetrachlorodifluoroethane (sym-, asym-, and mixtures thereof) isopropanol and nitromethane are useful as solvents to remove rosin fluxes from printed circuit boards containing the same. These mixtures are useful not only because of their high solvency characteristics but also because they exhibit essentially the constant boiling characteristics of a ternary azeotrope which is formed between these components, thereby facilitating handling and purification of the solvent mixtures without significantly altering their compositions. The ternary mixtures disclosed herein exhibit substantially higher solvency characteristics for rosin fluxes than the pure solvents, tetrachlorodifluoroethane, isopropanol or nitromethane.

3,694,369
SELECTIVE ION EXCHANGE FOR THE ISOLATION OF CERTAIN ALKALINE EARTHS
Kent A. Orlandini, West Chicago, Ill., assignor to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed May 11, 1971, Ser. No. 142,361
Int. Cl. G21c *19/46*
U.S. Cl. 252—301.1 R 9 Claims

A process for the separation of strontium and barium from other metal values wherein the strontium, barium and other metal values are dissolved in a solvent solution of water, pyridine, acetic acid and glycolic acid and the resulting solution is contacted with a cation exchange resin whereby only the strontium and barium are adsorbed on the resin. Following washing of the resin, the strontium and barium are subsequently eluted therefrom.

3,694,370
PROCESS FOR PALLADIUM RECOVERY
John V. Panesko, Richland, Wash., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed June 21, 1971, Ser. No. 155,013
Int. Cl. G21c *19/42*
U.S. Cl. 252—301.1 R 6 Claims



Palladium values are recovered from alkaline Purex supernatant waste feed solutions containing palladium, rhodium and technetium values by passing the solution through a bed of activated charcoal which selectively sorbs the palladium while permitting the other values to pass through the bed. The palladium values are recovered by elution with water and then with ammonium hydroxide.

3,694,371
HOMOGENEOUS PRECIPITATION OF ALKALINE-EARTH METAL HALOPHOSPHATE PHOSPHORS
Armand J. Panson and Roswell J. Ruka, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
No Drawing. Filed Jan. 26, 1971, Ser. No. 109,988
Int. Cl. C09k *1/36*
U.S. Cl. 252—301.4 P 5 Claims

A method of preparing alkaline-earth metal halophosphate phosphor is detailed. The method comprises first homogeneously precipitating the apatite-structured activator-doped alkaline-earth metal and halogen containing phosphate, and then heating this precipitate to optimize its luminescence. The homogeneous precipitation is effected by incorporating the alkaline-erath metal into solution as an alkaline-earth metal complex which is readily dissociated upon heating, and by heating the resulting solution to dissociate the complex and effect formation of the precipitate.

3,694,372
MINUTE CAPSULES AND THEIR MANUFACTURE, EN MASSE
Jerrold L. Anderson and Robert C. Haines, Jr., Dayton, and Thomas C. Powell, West Alexandria, Ohio, assignors to The National Cash Register Company, Dayton, Ohio
No Drawing. Filed Dec. 8, 1970, Ser. No. 96,233
Int. Cl. B01j *13/02*; B44d *1/02*
U.S. Cl. 252—316 9 Claims

A method is disclosed for preparing, en masse, in a liquid manufacturing vehicle, minute capsules having walls of polymeric materials such as ethyl cellulose and particles of core material such as urea and sodium chloride. Development of the process included the discovery that the particle size of the encapsulated material decreases as the concentration of wall material is increased. Additionally, increasing the concentration of core material also controls the particle size of the capsule. The produced capsule is a unit with a high intra surface area to volume ratio.

3,694,373

PRODUCTION OF REDUCING GAS

Warren G. Schlinger, Pasadena, and William L. Slater, La Habra, Calif., and Roger M. Dille, Richmond, Va., assignors to Texaco Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 879,926, Nov. 25, 1969, which is a continuation-in-part of application Ser. No. 732,908, May 29, 1968, now Patent No. 3,528,930, which is a continuation-in-part of application Ser. No. 510,038, Nov. 26, 1965, which in turn is a continuation-in-part of application Ser. No. 285,868, June 6, 1963. This application Apr. 19, 1971, Ser. No. 135,359

Int. Cl. C01b *2/14*

U.S. Cl. 252—373 6 Claims

A gas having a reducing ratio (mols of $CO+H_2$ to mols of CO_2+H_2O) of at least 10 is produced by partial combustion of a hydrocarbon oil with oxygen of at least 95% purity, the oil being introduced as a liquid mixture with water into the reaction zone. Temperature in the reaction zone is maintained below about 3000° F, and the product gas contains as free carbon not more than 2 weight percent of the carbon content of the feed.

3,694,374

ANTIOXIDANT MIXTURE OF AN AMINEBORATE AND A KETONEPHENOL OR ALDEHYDEPHENOL

Allen K. Sparks, 30 Algonquin Road, Des Plaines, Ill. 60016, and James J. Louvar, 534 Hinman, Evanston, Ill. 60202

No Drawing. Filed May 11, 1970, Ser. No. 36,494

Int. Cl. B01j *1/16*

U.S. Cl. 252—400 15 Claims

Synergistic mixture of (1) borate of N,N-dihydrocarbyl-alkanolamine or borate of polyalkyl- or polycycloalkylpolyhydroxyalkyl-alkylenepolyamine and (2) reaction product of a phenol and ketone or aldehyde. In one embodiment the mixture is particularly useful in the stabilization of plastics and resins.

3,694,375

THIODIALKANOAMIDOPHENOL ANTIOXIDANTS

Martin Knell, 4 Possum Road, Ossining, N.Y. 10562, and Martin Dexter, 416 Cedar Drive, Briarcliff Manor, N.Y. 10510

No Drawing. Original application Mar. 25, 1969, Ser. No. 810,352. Divided and this application Dec. 21, 1970, Ser. No. 100,497

Int. Cl. C07c *103/38*; B01j *1/16*

U.S. Cl. 252—402 5 Claims

Novel thiodialkanoamidophenol compounds are provided by a procedure involving the reaction of an alkylaminophenol and a thiodialkanoyl chloride. The thiodialkanoamidophenol products are useful as stabilizers of organic materials which are subject to oxidate deterioration.

3,694,376

OXIDATION-REDUCTION REGENERATION OF NOBLE METAL CATALYSTS USED IN HYDROGEN PEROXIDE PRODUCTION

Gerhard E. Kabisch, 13 Schillerstrasse, Rheinfelden, Germany, and Siegfried H. Raupach, 24 Talstrasse, Beuggen, Germany

Filed July 13, 1970, Ser. No. 54,237

Claims priority, application Germany, July 12, 1969, P 19 35 478.0

Int. Cl. B01j *11/18*

U.S. Cl. 252—413 9 Claims

Palladium alone, or mixed with other metals of the platinum group on a silica containing carrier used in the hydrogenation step of the anthraquinone process for producing hydrogen peroxide is regenerated by an oxidation treatment at a pH below 7 followed by a reduction treatment at a temperature below 200° C., preferably below 150° C.

3,694,377

BUTYL RUBBER CATALYST SYSTEM

Joseph P. Kennedy, Akron, Ohio, and Francis P. Baldwin, Summit, N.J., assignors to Esso Research and Engineering Company

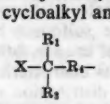
No Drawing. Continuation-in-part of application Ser. No. 712,605, Mar. 13, 1968, now Patent No. 3,560,458. This application Dec. 2, 1970, Ser. No. 94,537

Int. Cl. C08d *3/02*

U.S. Cl. 252—431 R 10 Claims

A catalyst system for preparing homopolymers and copolymers of cationically polymerizable monomers wherein the catalyst system comprises an organic halide promoter and a cationic catalyst of the type $Al(M)_2R$, where M is a branched or straight-chain C_1 to C_{12} alkyl and R is M, hydrogen or halogen. The organic halide may be represented by the general formula

wherein X is a halogen, R_1 is selected from the group consisting of hydrogen, C_1 to C_8 alkyl, phenyl and C_2 to C_8 alkenyl, R_3 is selected from the group consisting of hydrogen, C_1 to C_8 alkyl, phenyl, C_2 to C_8 alkenyl and phenylalkyl and R_2 is selected from the group consisting of C_2 to C_8 alkyl, C_2 to C_8 alkenyl, phenyl, phenylalkyl, alkylphenyl, C_3 to C_{10} cycloalkyl and



wherein R_1, R_3 and X are as defined above and R_4 is selected from the group consisting of phenylene, biphenyl, α,ω-diphenylalkane and $-(CH_2)_n-$, wherein n is an integer of from 1 to 10.

3,694,378

PROCESS FOR THE PREPARATION OF CATALYSTS CONTAINING CRYSTALLINE ALUMINOSILICATE ZEOLITES

Johannes Ebregi, Boomweijdt 15, Heiloo, Netherlands

No Drawing. Filed Mar. 27, 1970, Ser. No. 23,474

Claims priority, application Netherlands, Mar. 31, 1969, 6904913

Int. Cl. B01j *11/36, 11/40*

U.S. Cl. 252—451 9 Claims

In the preparation of catalysts containing crystalline aluminosilicate zeolites, a zeolite is introduced into a silicon dioxide sol and/or gel, and/or into a separately prepared co-gel of silicon dioxide and an oxide of at least one metal from Groups III–A and IV–A of the periodic table, such as aluminum oxide, and the co-gel, which may be wet or dried, is mixed with the silicon dioxide sol and/or gel prior to the drying of the latter, whereupon the resulting composition is gelled, if not already fully gelled, and then dried and activated.

3,694,379

CATALYST FOR CATALYTIC CRACKING OR STEAM REFORMING OF HYDROCARBONS AND PROCESS FOR PRODUCING THE CATALYST

Goro Yamaguchi, 1554 Tsuda-machi, Kodaria-shi, Tokyo, Japan; and Susumu Komatsu, 1099 Uraimbe; Kazuhiro Yoshizaki, 98 Uraimbe; and Tetsuo Fukumoto, 783 Uraimbe, all of Bizen-cho, Wake-gun, Okayama-ken, Japan

Filed Apr. 1, 1970, Ser. No. 24,543

Claims priority, application Japan, Aug. 28, 1969, 44/67,562

Int. Cl. B01j *11/06, 11/40*

U.S. Cl. 252—455 R 8 Claims

A catalyst for catalytic cracking or steam reforming of hydrocarbons and the process for producing the same, in

which said catalyst being of alkali polyaluminates, or 2% or more of alkali polyaluminates supported on refractory carrier, or the above-mentioned catalysts which are added with 0.5% or more of chrome or a metal selected from Group VIII of the Periodic Table, or a mixture thereof.

3,694,380

Patent Not Issued For This Number

3,694,381

Patent Not Issued For This Number

3,694,382

ESTER LUBRICANT

Joseph P. Kleiman and Robert E. Malec, Birmingham, and Larry Lonsker, Bloomfield Hills, Mich., assignors to Ethyl Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 840,835, July 10, 1969. This application May 28, 1971, Ser. No. 148,177

Int. Cl. C10m *1/26*

U.S. Cl. 252—56 S **9 Claims**

A blend of (a) about 1.5–2.5 parts of a trimethylolpropane ester of a mixture of aliphatic monocarboxylic acids containing from 4–12 carbon atoms with (b) about 0.75–2 parts of a dipentaerythritol ester of a mixture of aliphatic monocarboxylic acids containing 4–10 carbon atoms gives an ester blend useful as a synthetic lubricant, especially in turbines and turbojet engines.

3,694,383

PROCESS FOR THE PRODUCTION OF LIGHT-SENSITIVE POLYMER

Kyoichiro Azami, Ichikawa, Hiroshi Ohotani, Adachi-machi, and Hiroshi Fukutomi, Urawa, Japan, assignors to Dainippon Ink and Chemicals, Incorporated, Tokyo, Japan

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,196

Int. Cl. C08g *33/00, 33/02*

U.S. Cl. 260—2 XA **13 Claims**

A process for the production of a light-sensitive polymer which comprises substituting a light-sensitive group for the halogen atom of a polybishalomethyloxetane.

3,694,384

REDOX POLYMERS

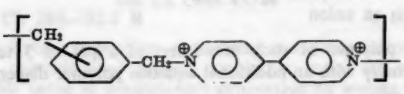
Arnold Factor, Scotia, and George E. Heinsohn, Ithaca, N.Y., assignors to General Electric Company

No Drawing. Filed Jan. 11, 1971, Ser. No. 105,642

Int. Cl. C08g *33/06*

U.S. Cl. 260—2.2 R **11 Claims**

Redox polymers, which, in the oxidized cationic form, contain repeating units of the formula:



are readily reduced, either chemically or electrically, and change color from colorless to intense blue-violet. The reduced form is readily oxidized with oxygen in air or dissolved in solution so that it is useful for deoxygenating gases or liquids with the color change being a self-indicator of the redox state of the polymer. These compositions can be made so that they are soluble or insoluble in aqueous media and form polyelectrolyte complexes with cation exchange resins.

3,694,385

PROCESS FOR OPEN-CELL RIGID POLYURETHANE FOAMS

Ival O. Salyer, Dayton, and Robert T. Jefferson, West Carrollton, Ohio, assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Continuation-in-part of application Ser. No. 663,489, Aug. 28, 1967. This application Feb. 19, 1970, Ser. No. 12,834

The portion of the term of the patent subsequent to Jan. 26, 1987, has been disclaimed

Int. Cl. C08g *41/04*

U.S. Cl. 260—2.5 A **7 Claims**

Open-cell rigid polyurethane foams are prepared from polyether polyols using, as a pneumatogen, cyclopentane-acetone mixtures with water and, as a nucleating agent, finely divided polyethylene particles.

3,694,386

POLYURETHANE FOAMS PREPARED FROM 2,4-BIS(4 - ISOCYANATOCYCLOHEXYLMETHYL)-CYCLOHEXYL ISOCYANATE

Guenther Kurt Hoeschele, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 741,847, July 2, 1968. This application Sept. 17, 1970, Ser. No. 73,234

Int. Cl. C08g *22/44, 22/24, 22/28*

U.S. Cl. 260—2.5 AT **11 Claims**

Polyurethanes prepared by reacting the triisocyanate, 2,4 - bis(4 - isocyanatocyclohexylmethyl)cyclohexyl isocyanate, with at least one active-hydrogen containing compound. The polyurethanes include coatings, foams, adhesives and elastomers. The coatings dry rapidly to a tack-free state and are particularly resistant to weather exposure. The foams generally have improved compression set compared with foams prepared from conventional polyisocyanates. Overall, the polyurethane formulations of this invention exhibit particularly convenient pot lives.

3,694,387

PHENOLIC RESIN FOAMS

Hans Junger, Troisdorf, and Franz Weissenfels, Siegburg, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing. Filed Nov. 17, 1971, Ser. No. 199,771

Claims priority, application Germany, Nov. 28, 1970, P 20 58 663.4

Int. Cl. C08j *1/26*

U.S. Cl. 260—2.5 F **9 Claims**

A resol-based phenolic resin foam having an improved resistance to heat and fire, having a density of about 20

to 200 kg./m.³, a shrinkage of about 0.1 to 2.8% and the absence of any tendency to fissure upon exposure for 30 minutes to a temperature of 450° C. in a muffle furnace, the shrinkage and fissuring tests being made on foam slabs having the dimensions 250 mm. x 130 mm. x 30 mm. The foam is produced by including in a liquid phenol-resol resin having a solid resin content of about 60 to 85% by weight about 2 to 30% by weight based on the resin, of a normally hydrocarbon liquid. Boric acid may also be included in the mix which also contains an acid hardening agent and a gas foaming agent which releases a gas or is a low-boiling organic solvent.

3,694,388

ACRYLIC POLYMERS

William Connelly, Leonard Sydenham, and John Szilagyi, Toronto, Ontario, Canada, assignors to Canadian Industries Limited, Montreal, Quebec, Canada

No Drawing. Filed July 2, 1970, Ser. No. 52,063

Int. Cl. C08f *27/12*

U.S. Cl. 260—23 EP **5 Claims**

An acrylic polymeric material consisting of the reaction product of (1) a copolymer of essentially methyl methacrylate and glycidyl acrylate or methacrylate and an aliphatic monocarboxylic acid selected from lauric acid, 4-amino-butyric acid, 11-amino-undecanoic acid, pyruvic acid and dimethoxy-phenylacetic acid.

3,694,389

THERMOSETTING COATINGS BASED ON OXIME-BLOCKED ISOCYANATES

Jerome F. Levy, Dresher, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Aug. 6, 1970, Ser. No. 61,792

Int. Cl. C08g *22/06*

U.S. Cl. 260—23 TN **11 Claims**

Thermosetting coating compositions which comprise an oxime-blocked polyisocyanate and a solution copolymer of an active hydrogen-containing monoethylenically unsaturated compound. The curing of these compositions is most effectively catayIzed by an organosoluble zinc salt.

3,694,390

EPOXIDIZED POLYAMIDE RESIN FORMING STABLE AQUEOUS SOLUTIONS OF HIGH CONCENTRATION

Alfred Edwards Winslow, 60 Main St., Unadilla, Otsego, N.Y. 13849

No Drawing. Original application Apr. 25, 1969, Ser. No. 819,493. Divided and this application Mar. 30, 1970, Ser. No. 29,323

Int. Cl. C08g *20/38*

U.S. Cl. 260—29.1 R **12 Claims**

This invention relates to a curable low molecular weight cationic epoxidized polyamide, stably dispersible in water at high concentration and low viscosity and in particular to a method of preparing said polyamide comprising reacting a cyclic polycarboxylic acid first with from about 1.8 to about 4.0 molar equivalents of a polyalkylene polyamine and then with between about 3.5 and about 16 molar equivalents of an epoxy compound. The invention relates also to a starch dispersion comprising minor quantities of said epoxidized polyamide and to a method of improving the dry strength of paper by incorporating said starch dispersion in the fibrous pulp or web.

3,694,391

Patent Not Issued For This Number

3,694,392

COATING COMPOSITIONS CONTAINING FLUOROCARBON POLYMER AND LITHIUM POLYSILICATE

Ervin R. Werner, Jr., Levittown, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 778,828, Nov. 25, 1968. This application Dec. 22, 1970, Ser. No. 100,766

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 F **14 Claims**

A composition for priming a surface to improve the adhesion of a fluorocarbon polymer topcoat. The composition contains about 10–75% of lithium polysilicate, 25–90% of a flourocarbon polymer, and a liquid carrier.

3,694,393

METHOD OF PRODUCING PAPER, AND PAPER OBTAINED

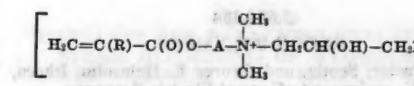
Sheldon N. Lewis, Willow Grove, Richard F. Merritt, Fort Washington, and William D. Emmons, Huntingdon Valley, Pa., assignors to Rohm and Haas Co., Philadelphia, Pa.

No Drawing. Original application Apr. 4, 1969, Ser. No. 813,724. Divided and this application Sept. 13, 1971, Ser. No. 180,154

Int. Cl. C08f *3/64, 3/66, 15/26*

U.S. Cl. 260—29.6 **9 Claims**

This invention is concerned with the making of paper, including paperboard, which is sized and/or has improved wet strength. For example, there is added to a paper pulp, such as in the beater, a monomer of the formula



wherein X is a chlorine atom,
R is H or CH_3,
A is an alkylene group and
Y is an anion

or a polymer of such monomer, at a pH of 3 to 10, optionally with an additional aqueous polymer dispersion.

3,694,394

COATING COMPOSITIONS

Maurice Freeman, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Apr. 4, 1969, Ser. No. 813,738

Claims priority, application Great Britain, Apr. 16, 1968, 17,894/68

Int. Cl. C08d *7/00;* C08f *15/40, 37/18*
U.S. Cl. 260—29.7 W 8 Claims

Aqueous coating compositions comprising blends of latices, one insoluble in aqueous alkali and the other substantially swellable in said alkali.

3,694,395

SECONDARY ALKYL ARYL PHOSPHITES

Peter James Stratford Bain, 12 Maesmawr Road, and Ernest Bryson McCall, Penrhos, Dinbren Road, both of Llangollen, Wales

No Drawing. Filed Dec. 15, 1969, Ser. No. 885,259

Claims priority, application Great Britain, June 5, 1969, 28,472/69

Int. Cl. C08d *7/10*
U.S. Cl. 260—29.7 P 9 Claims

Novel aryl phosphites with secondary alkyl groups in the benzene ring are disclosed. The phosphites are stabilizers for synthetic rubber and are particularly suited for latex applications. The new stabilizers are low viscosity liquids having excellent hydrolytic stability.

3,694,396

METHOD FOR PRODUCING A POLYURETHANE SOLUTION

Yasuji Nakahara, Kiyoshi Ichikawa, and Kunio Kondo, Fujishi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Dec. 29, 1970, Ser. No. 102,502

Int. Cl. C08g *22/04*
U.S. Cl. 260—30.8 DS 13 Claims

A polyurethane solution suitable for producing polyurethane elastic yarns, films, elastmers, foams or the like having superior, light-fastness and laundry fastness is produced by adding a solution of a prepolymer into a solution of an organic diamine and a pyridine-carboxylic acid hydrazide derivative to cause the reaction between the foregoing reactants. Said prepolymer contains remaining NCO radical and is obtained by reacting (1) a polymer having bifunctional group, terminal active hydrogen at both the ends and a molecular weight of 500–5,000 and (2) an organic diisocyanate.

3,694,397

HEXACHLOROCYCLOPENTADIENE ADDUCTS OF UNSATURATED AMIDES

Robert R. Mod, Frank C. Magne, and Evald L. Skau, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Nov. 21, 1969, Ser. No. 878,922. Divided and this application Dec. 16, 1971, Ser. No. 208,945

Int. Cl. C08f *45/44*
U.S. Cl. 260—32.6 R 1 Claim

A plastic composition comprising a major portion of vinyl chloride-vinyl acetate copolymer resin, the vinyl chloride being in predominant proportion by weight, and a plasticizer therefor which plasticizer is N,N-dibutyl-8-(1,4,5,6,7,-hexachloro-3-octylbicyclo [2.2.1]-5-heptene-2-yl) octanamide.

3,694,398

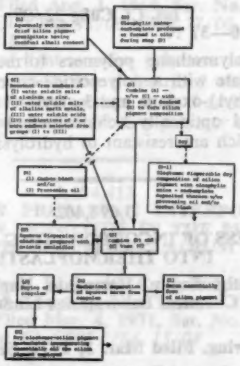
SILICA PIGMENTS AND ELASTOMER-SILICA PIGMENT MASTERBATCHES AND PRODUCTION PROCESSES RELATING THERETO

Oliver W. Burke, Jr., 1510 SW. 13th Court, Fort Lauderdale, Fla. 33061

Continuation-in-part of application Ser. No. 798,215, Sept. 16, 1968, which is a division of application Ser. No. 611,250, Jan. 24, 1967, now Patent No. 3,523,096, which in turn is a continuation-in-part of applications Ser. No. 458,379 and Ser. No. 458,420, both May 24, 1965, and Ser. No. 479,806, Aug. 16, 1965, now Patent No. 3,401,017. This application July 16, 1970, Ser. No. 55,479

Int. Cl. C08c *11/10;* C08d *9/00*
U.S. Cl. 260—33.6 AD 7 Claims

Curbing of silica pigment losses and the promotion of uniformity of product in the preparation of an elastomer-silica pigment masterbatch are effected (a) by combining (1) an aqueously wet hydrated silica pigment precipitate which has a bound alkali content, which has been prepared by precipitation from an aqueous alkali metal silicate solution, and which has been continuously maintained in an aqueously wet state without having been dried therefrom after its precipitation, with (2) a quantity of oleophilic amine carboxylate material, (3) combining the resulting treated wet silica pigment slurry with an aqueous dispersion of the elastomer containing an anionic dispersing agent, with or without (4) carbon black and/or processing oil, and (5) with selected reactant-coagulant, and (b) recovering the resulting coagulum as a masterbatch, the steps prior to (b) having rendered the serum of the aqueous mixture essentially free of silica pigment. Prior to combination with the elastomer dispersion the oleophilic amine carboxylate treated silica pigment may be recovered as a useful dispersible silica pigment product, or the wet silica pigment may be treated with water soluble salts of aluminum and/or zinc and/or alkaline earth metal and/or water soluble acid, together with the oleophilic amine carboxylate, and after such treatment the resulting pigment composition may be recovered from the slurry with or without prior addition of processing oil to the slurry, as a useful dispersible silica pigment composition, or the so treated wet silica pigment may be combined as in (3), (4) and (5) above, and be recovered as in (b) above in the form of a masterbatch.



3,694,399

METHOD OF PRODUCING PAPER-LIKE POLYMER FILM AND THE PRODUCT

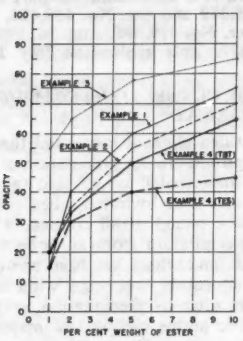
Eckhard C. A. Schwarz, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sept. 25, 1970, Ser. No. 75,629

Int. Cl. B29c *25/00;* B29b *7/24;* C07f *7/28*

U.S. Cl. 260—41 B 14 Claims

Paper-like films are produced by extruding molten polystyrene or polystyrene/polyolefin mixtures with 1 to 20% based on the weight of the polymer or a hydrolyzable metal alkyl ester of titanium, silicon, or the like and orienting longitudinally in a heated water bath, then stretching



laterally in the presence of steam. After drying, the film is opaque, paper-like, and receptive to conventional inks.

3,694,400

Patent Not Issued For This Number

3,694,401

NOVEL POLYURETHANE FILMS

Jürgen Gärtner, 32 Zonser Strasse, 4 Dusseldorf, Germany

No Drawing. Filed Oct. 22, 1970, Ser. No. 83,192

Claims priority, application Germany, Oct. 28, 1969, P 19 54 174.3

Int. Cl. C08g *22/08*

U.S. Cl. 260—37 N 8 Claims

Novel polyurethane polymers formed by reacting a polyisocyanate with a polyepoxide copolymer of 3,3-bis-(chloromethyl)-oxetane and 3-alkyl - 3 - hydroxymethyl-oxetane and optionally-3-chloromethyl-3-hydroxymethyl-oxetane which are resistant to hydrolysis.

3,694,402

PROCESS OF INCORPORATING ADDITIVES INTO THERMOPLASTICS

David Maltby Essam, Harrogate, England, assignor to Imperial Chemical Laboratories Limited, London, England

No Drawing. Filed Mar. 3, 1971, Ser. No. 120,694

Claims priority, application Great Britain, Mar. 4, 1970, 10,422/70

Int. Cl. C08g *51/04;* C08f *45/04*

U.S. Cl. 260—40 R 8 Claims

A process is disclosed for the manufacture of extruded articles of a thermoplastic polymer mixed with a minor proportion of solid additive of melting point lower than that of the thermoplastic polymer, wherein the thermoplastic polymer in granular form is continuously fed to a screw extruder, the required proportion of the additive in the form of granules coated with a thermoplastic polymer of melting point at least 30° C. above that of the additive is continuously fed into the stream of granulated thermoplastic polymer, the screw extruder being so designed and so operated as to effect melting and mixing of the thermoplastic polymer and the additive, and the resultant mixture is extruded to form extruded articles.

3,694,403

POLYOLEFIN COMPOSITIONS

Itsuho Aishima, Kurashiki, Yukichi Takashi, Kawasaki, and Toshinori Koseki, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Dec. 2, 1970, Ser. No. 94,549

Claims priority, application Japan, Dec. 13, 1969, 44/99,804, 44/99,805

Int. Cl. C08f *45/04*

U.S. Cl. 260—41 R 10 Claims

Polyolefin compositions having excellent transparency and rigidity, said compositions comprising 30–96 parts by weight of polyolefin and 70–4 parts by weight of magnesium carbonate having a number average particle diameter smaller than about 50μ and a maximum particle diameter of about 100μ. An unsaturated carboxylic acid or anhydride may also be added to improve the impact resistance.

3,694,404

FLUORINATED COMPOUNDS

Frederick A. Fleming, St. Paul, Robert J. Koshar, Lincoln Township, Washington County, and Charles D. Wright, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Nov. 16, 1964, Ser. No. 412,291

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 AL 3 Claims

1. A compound containing the isocyanate group and otherwise consisting essentially of nitrogen, carbon and fluorine, said compound having from 2 to 3 carbon atoms separated by nitrogen atoms and containing at least 2 nitrogen atoms, at least one of which is fluorinated; having a ratio of nitrogen to carbon atoms ranging from 2:3 to 5:3; and further characterized by containing from about 40 to 60 percent by weight of fluorine.

2. Difluoraminodifluoromethyl isocyanate having the formula:

$$F_2N—CF_2—NCO$$

3,694,405

REARRANGEMENT OF ORGANOSILOXANES USING MACRORETICULAR SULFONIC ACID CATION EXCHANGE RESIN

Carl James Litteral, Newport, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Oct. 21, 1970, Ser. No. 82,721

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 R 17 Claims

This invention relates to a process for the siloxane bond rearrangement of organosiloxanes to form restructured organosiloxanes by flowing organosiloxanes through a packed bed of macroreticular sulfonic acid cation exchange resin having a specific pore volume of at least

0.01 cc./gm., removing the effluent organosiloxanes having restructured siloxane bond arrangements with attendant molecular weight changes and thereafter recovering the restructured organosiloxanes. The restructured organosiloxanes may range from cyclic to linear structures in a wide range of molecular weights. This invention also relates to a continuous process for the preparation of restructured organosiloxanes as aforesaid in which the organosiloxane effluent is fractionated to recover a desired boiling range product and undesired fractions are recycled into the process. The product organosiloxanes may range from volatiles to oils to gums to nonflowing polymers and are useful as chemical intermediates, coatings, and treating agents.

3,694,406

PREPARATION OF POLYOXAZOLIDONES

Gaetano F. D'Alelio, South Bend, Ind., assignor to the United States of America as represented by the Secretary of the Air Force

No Drawing. Filed July 31, 1970, Ser. No. 60,141
Int. Cl. C08g *30/04*
U.S. Cl. 260—47 EP **9 Claims**

A process for preparing polyoxazolidones is provided in which a polyepoxide is reacted with a polyisocyanate in the presence of a catalytic amount of an organic phosphonium halide. The polymer products so produced can be used in a variety of applications, such as coatings, castings, molding compositions, adhesives, filament winding, sealant and calking compounds, potting compounds, impregnating compounds, and the like.

3,694,407

EPOXY-CONTAINING CONDENSATES, THEIR PREPARATION AND USE

Robert R. Krikorian, Moorestown, N.J., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Aug. 11, 1970, Ser. No. 63,029
Int. Cl. C08g *30/04*
U.S. Cl. 260—47 EP **10 Claims**

Epoxy-containing condensates having high functionalities, i.e., greater than two, and exhibiting improved elevated temperature performance, are described. These solid, fusible, acetone-soluble epoxy-containing condensates are prepared by reacting (1) a polyepoxide possessing more than one vic-epoxy group, and preferably a liquid glycidyl polyether of a polyhydric phenol, with (2) a special polyhydric phenol, such as an alpha,alpha, omega,omega-tetrakis(hydroxyphenyl)alkane, in the presence of an organic phosphine or hydrocarbon phosphonium halide. The use of these condensates in molding formulations and the like are also described.

3,694,408

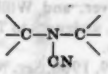
ORGANIC NITROGENOUS COMPOUNDS AND POLYMERS THEREOF

John Hynds, John Maddison Phillipson, and Edward Jervis Vickers, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Sept. 21, 1970, Ser. No. 74,123
Claims priority, application Great Britain, Sept. 26, 1969, 47,792/69
Int. Cl. C08g *33/02*
U.S. Cl. 260—47 R **13 Claims**

Polymerisable compositions are described which contain in the molecule at least two groups of the formula

linked together through an organic residue which is itself composed of smaller organic residues linked through groupings of the formula



In particular, the compositions are the products of reaction of an excess of a salt of an organic biscyanamide or polycyanamide with an organic dihalogeno or polyhalogeno compound. The compositions are valuable for the manufacture of coatings, castings, laminates and mouldings.

3,694,409

EPOXY RESIN CURED WITH A FATTY TETRAAMINE

Eugene J. Miller, Jr., Wheaton, Ill., Ago Mais, Trenton, N.J., and Donald J. Berenschot, Chicago, and Robert L. Berger, Elmhurst, Ill., assignors to Armour Industrial Chemical Company, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 410,014, Nov. 9, 1964. This application May 8, 1968, Ser. No. 727,675
Int. Cl. C08g *30/14*
U.S. Cl. 260—47 EN **2 Claims**

Use of tetraamines as epoxy resin curing agents.

3,694,410

USE OF CHELATES IN PREPARING POLYCYANURATES

Richard W. Oehmke, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Mar. 5, 1969, Ser. No. 804,688
Int. Cl. C08g *33/00*
U.S. Cl. 260—47 R **8 Claims**

Polycyanates, such as aromatic dicyanates and cyanatomethyl-terminated fluoroaliphtaic compounds, are mixed with metal chelate catalysts, such as zinc or ferric acetylacetonate, and heated to form cyanurate polymers. The polymers are useful in the preparation of adhesives, binders, coatings, and tooling compounds.

3,694,411

LIGHT-SENSITIVE POLYMERS

John A. Ford, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Aug. 1, 1969, Ser. No. 846,958
Int. Cl. C08g *43/00;* **C08f** *27/00*
U.S. Cl. 260—47 EP **10 Claims**

A novel class of light-sensitive polymers and their use in photographic reproduction is described which contains a 1-arylmethyleneindene group or a 5-arylmethylene-2(5H)-furanone group attached to a polymer backbone.

3,694,412

PROCESS FOR PREPARING INTERPOLYMERS OF CARBON MONOXIDE IN THE PRESENCE OF ARYL PHOSPHINE-PALLADIUM HALIDE COMPLEX

Kenzie Nozaki, El Cerrito, Calif, assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Mar. 4, 1971, Ser. No. 121,161
Int. Cl. C08f *1/64, 13/04*
U.S. Cl. 260—63 CQ **6 Claims**

High melting, high molecular weight interpolymers of carbon monoxide with at least one unsaturated compound such as the aliphatic monoolefins, i.e., ethylene, are prepared by reacting carbon monoxide with said unsaturated compounds in the presence of an aryl phosphine complex of a palladium halide and certain inert solvents.

3,694,413

POLYURETHANE ELASTOMER RENDERED ANTI-STATIC BY TREATMENT WITH IODINE

Richard R. Batzer, Denver, and William H. Reichardt, Englewood, both of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed April 19, 1968, Ser. No. 722,565
Int. Cl. C08g *22/04, 53/20*; F16g *1/14*
U.S. Cl. 260—75 NA 5 Claims

This invention discloses the use of certain halogen, and compounds thereof in order to minimize the static tendency of certain types of polymeric substances such as polyethylene terephthalate, rayon, polypropylene, polyvinyl chloride and polyurethane.

3,694,414

Patent Not Issued For This Number

3,694,415

COATING RESINOUS COMPOSITION

Kiyoshi Honda, Osaka; Mitsumasa Miyazaki, Amagasaki; Shozaburo Nomura, Osaka; Kazuo Akiyama, Aokikonendan, and Kazutoyo Hirose, Kawaguchi, all of Japan, assignors to Dainippon Ink & Chemicals, Inc., Tokyo and The Dainippon Ink Institute of Chemical Research, Kamikazaki, Urawa, Saitama Pref., Japan, part interest to each

Filed July 15, 1970, Ser. No. 55,212
Int. Cl. C08g *22/06*
U.S. Cl. 260—77.5 CR 10 Claims

A resinous coating composition capable of forming a cured coating film in air when irradiated with high energy ionizing radiation is formed by the admixture of (1) a resin obtained by reacting (A) an hydroxyl-containing vinyl polymer or copolymer with (B) an ethylenically unsaturated isocyanate obtained by reacting 1.4 to 0.6 moles of an ester of an α-β-unsaturated monocarboxylic acid containing at least one hydroxyl group in the molecule with one mole of a diisocyanate wherein 1,000 gm. of (A) is reacted with 0.1 to 0.4 gram equivalence of (B), to form a vinyl polymer or copolymer containing ethylenically unsaturated side chains, and (2) a monomer copolymerizable with said ethylenically unsaturated bonds in said resin (1).

3,694,416

INTERPOLYMERS OF ALIPHATIC CONJUGATED DIENES AND BLOCKED VINYL ISOCYANATES

Louis C. Rubens, and James T. K. Woo, both of Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 30, 1970, Ser. No. 93,884
Int. Cl. C08g *22/32*
U.S. Cl. 260—77.5 TB 3 Claims

This invention is directed to interpolymers of aliphatic conjugated dienes and blocked vinyl isocyanates which are particularly useful for forming self-anchoring coatings on various substrates and for the preparation of cross-linked or cross-linkable molding resins.

3,694,417

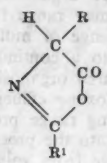
SOLID POLYMERS FROM OXAZOL-5-ONE AND A BIS-MALEIMIDE

Colin William Rigby, Barley, and Bernard Peter Stark, Cambridge, both of England, assignors to Ciba-Geigy A. G, Basel, Switzerland

Filed July 14, 1970, Ser. No. 62,739
Claims priority, application Great Britain, July 22, 1969, 36,905/69
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 UA 4 Claims

Process for preparing a polymer which comprises reaction of

A. an oxazol-5-one of formula



I

where R and R^1, which may be the same or different, each represent a hydrogen atom or an aliphatic, cycloaliphatic, aromatic, araliphatic, or heterocyclic group, free from ethylenic or acetylenic unsaturation, with

B. a compound containing at least two ethylenic carbon-carbon bonds per molecule.

3,694,418

LINEAR HEAT-HARDENABLE COPOLYMERIZATE

Jurgen Fock, Essen-Bredeney, and Ulrich Holtschmidt, Essen, both of Germany, assignors to Th. Goldschmidt A.G., Essen, Germany

Filed April 24, 1970, Ser. No. 31,748
Claims priority, application Germany, June 6, 1969, P 19 22 942.6
Int. Cl. C08f *19/10*
U.S. Cl. 260—78.5 R 2 Claims

This invention relates to a linear heat-hardenable copolymerizate, and to a method of treating a wood surface with a foil of the said copolymerizate, the copolymerizate having a limiting viscosity of $\eta = 0.7$ to 3.0 (100 ml · g^{-1}) measured in toluene at 20° C., and comprising

70 to 94 mole percent of a compound selected from the group consisting of styrene or at least one monomer having the formula

$$CH_2=\underset{\displaystyle R_1}{\overset{|}{C}}-COOR_2$$

in which R_1 is selected from the group consisting of hydrogen and a methyl group, and R_2 is an alkyl group having one to four carbon atoms,

2 to 15 mole percent of at least one compound selected from the group consisting of maleic anhydride and itaconic acid anhydride, and

4 to 15 mole percent of at least one compound selected from the group consisting of acrylic acid glycidyl ester and methacrylic acid glycidyl ester.

3,694,419

Patent Not Issued For This Number

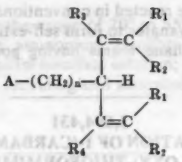
3,694,420

VULCANIZABLE AMORPHOUS OLEFINIC TERPOLYMERS FROM ALPHA OLEFINES AND POLYENES

Sebastiano Cesca, Arnaldo Roggero, and Walter Marconi, all of San Donato Milanese, Italy, assignors to Snam Progetti S.P.A., Milan, Italy

Filed April 23, 1970, Ser. No. 31,356
Claims priority, application Italy, April 23, 1969, 15876 A/69
Int. Cl. C08f *17/00*
U.S. Cl. 260—80.78 7 Claims

A new amorphous olefinic terpolymer is disclosed which is characterized by high vulcanization velocity and is represented by the formula:



wherein A is a group containing at least one endomethylenic ring, R_1, R_2, R_3 and R_4 are members of the group consisting of hydrogen and alkyl radical containing from one to eight carbon atoms and n is 0 to 8.

3,694,421

PROCESS FOR THE POLYMERIZATION OF OLEFINS

Hans-Joachim Vetter, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed June 25, 1969, Ser. No. 836,573

Claims priority, application Germany, Aug. 30, 1968, P 17 95 268.0

Int. Cl. C08f *1/56, 3/06*

U.S. Cl. 260—88.2 R **7 Claims**

Process for homo- and copolymerizing olefins in the presence of mixed catalysts, one component of which is prepared by reacting magnesium compounds containing OH-groups with aldehydes and subsequently with tetravalent titanium compounds, and the second compound of which is an organo-aluminum compound. Already under a pressure of less than 20 atmospheres the yields per catalyst are so high that the catalyst remainders in the polymer need not be removed. Moreover, the polymers have a particle size distribution which is favorable for their processing.

3,694,422

LIGHT ACTIVATION OF TETRAALKYLCHROMIUM COMPOUNDS IN POLYMERIZATION OF OLEFINS

Wendell P. Long, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Feb. 2, 1971, Ser. No. 112,019

Int. Cl. C08f *1/42, 3/06*

U.S. Cl. 260—93.7 **10 Claims**

The activity of tetraalkylchromium compounds as catalysts for the polymerization of 1-olefins is greatly enhanced by exposure of the catalyst, either prior to or during the polymerization, to light. Any source of light having a wave length of from about 280 to 600 nanometers can be used. Organometallic activators such as triethylboron or alkylaluminum compounds can be used to further activate these catalysts.

3,694,423

OLEFIN CATALYST SLURRY FEEDING PROCESS AND APPARATUS

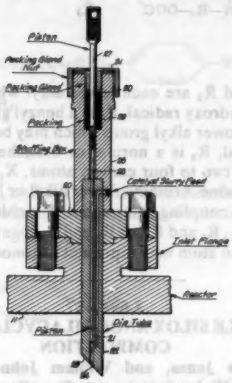
Wayne E. Smith, Overland Park; Robert L. Batchelor, Shawnee Mission, both of Kans., and Kenneth J. Fulk, Tiffin, Ohio, assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jan. 18, 1971, Ser. No. 107,226

Int. Cl. C08f *1/98, 3/02*

U.S. Cl. 260—94.3 **5 Claims**

In mono 1-olefin and diolefin polymerization processes, an improved method and apparatus for introducing a catalyst slurry into the polymerization zone which comprises pressurizing a catalyst slurry through a first transport zone to a second



transport zone and thereafter sweeping the catalyst slurry through the second transport zone to the polymerization zone.

3,694,424

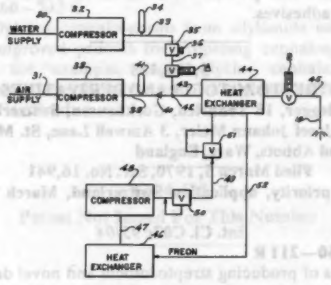
METHOD OF INTERNALLY COOLING A BLOW MOLDED ARTICLE

Denes B. Hunkar, Cincinnati, Ohio, and Jeno Peter Bercz, Haddon Tp., N.J., assignors to Hunkar Laboratories Inc., Cincinnati, Ohio

Filed Oct. 13, 1970, Ser. No. 80,266

Int. Cl. B29c *17/07, 25/00*

U.S. Cl. 264—98 **11 Claims**



A method of blow molding a hollow article of thermoplastic material in which the newly formed article is cooled internally by explosively injecting into the article a charge of a highly pressurized and chilled mixture of air and water.

3,694,425

Patent Not Issued For This Number

3,694,426

CATIONIC AZO DYES

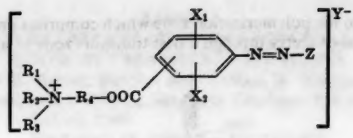
Nagib A. Doss, Loudonville, N.Y., assignor to GAF Corporation, New York, N.Y.

Filed Oct. 20, 1969, Ser. No. 867,912

Int. Cl. C09b *29/08*

U.S. Cl. 260—156 **11 Claims**

Cationic azo dyes which are particularly suitable for dyeing synthetic fibers as well as natural fibers having the formula:



wherein R_1 and R_2 are each lower alkyl which may be substituted by a hydroxy radical, R_3 is a benzyl group, a cyclohexyl group, or a lower alkyl group which may be substituted by a hydroxy radical, R_4 is a normal or branched-chain alkylene radical having two to four carbon atoms, X_1 and X_2 are each hydrogen, chlorine, bromine, lower alkyl or lower alkoxy, Z is the radical of a coupling component, X is chlorine or bromine, and wherein R_1, R_2 and R_3, or R_2 and R_3 together with the contiguous nitrogen atom may represent a monocyclic group.

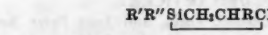
3,694,427

CURABLE SILOX ANOL-SILACYCLOBUTANE COMPOSITION

David Andrew Jonas, and William John Owen, both of Glamorgan, Wales, assignors to Dow Corning Limited, London, England

Filed March 12, 1971, Ser. No. 123,862
Int. Cl. C08f 21/01
U.S. Cl. 260—18 S 9 Claims

Siloxane polymers containing an average of at least two hydroxyl groups bonded to silicon in each molecule can be cured employing silacyclobutanes of the general formula



where R is H or alkyl of one to six carbons, R′ and R″ are each hydrocarbyl, halogenohydrocarbyl or a radical reactive with ≡SiOH, at least one R′ or R″ being such a reactive radical. The composition can be illustrated by a mixture of hydroxyl end-blocked dimethylpolysiloxane and 1,1-dimethoxy-1-silacyclobutane. The products are useful as silicone rubbers, resins and adhesives.

3,694,428

STREPTOZOTOCIN AND DERIVATIVES

Emil Hardegger, 15 Tennried, Gockhausen, Switzerland, and Arthur Josef Johann Meier, 3 Amwell Lane, St. Margarets, Stanstead Abbots, Ware, England

Filed March 5, 1970, Ser. No. 16,941
Claims priority, application Switzerland, March 7, 1969, 3502/69
Int. Cl. C07c 95/04
U.S. Cl. 260—211 R 8 Claims

Methods of producing streptozotocin and novel derivatives thereof by reacting an N-nitroso-alkylcarbamyl azide with D-glucosamine or an acid addition salt thereof are disclosed. Novel intermediates which are useful in the process are also disclosed. Streptozotocin and its novel derivatives are useful as diabetogenetic compounds.

3,694,429

Patent Not Issued For This Number

3,694,430

PHOSPHORUS-CONTAINING SUGAR POLYOLS AND POLYURETHANE FOAMS THEREFROM

John S. Heckles, and Edwin J. Quinn, both of Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed May 5, 1969, Ser. No. 822,025
Int. Cl. C07c 69/32
U.S. Cl. 260—234 R 1 Claim

Phosphono-substituted carboxylic acid esters are ester interchanged with sugar polyols. The resulting phosphorus-containing ester can be reacted in conventional manner with conventional polyisocyanates to form self-extinguishing or flame-retardant polyurethane foams having good stability against hydrolysis.

3,694,431

PREPARATION OF 1-(CARBAMOYL)-N-(CARBAMOYLOXY)-THIOFORMIMIDATES FROM ACETOACETAMIDES

Julius J. Fuchs, 1104 Greenway Road, Wilmington, Del., and Harvey M. Loux, 115 Summerset Drive, Hockessin, Del.

Continuation-in-part of Ser. No. 787,594, Dec. 27, 1968, abandoned. This application Sept. 16, 1970, Ser. No. 72,793
Int. Cl. C07d 29/22
U.S. Cl. 260—239 A 2 Claims

1-(Carbamoyl)-N-(carbamoyloxy)thioformimidates such as methyl 1-(carbamoyl)-N-methylcarbamoyloxy)thioformimidate and methyl 1-(dimethylcarbamoyl)-N-(methylcarbamoyloxy)thioformimidate are prepared by the steps of

a. reacting diketene with ammonia or an amine to obtain an acetoacetamide;
b. reacting the product of (a) with a nitrosating agent in the presence of water or an alcohol;
c. chlorinating the product of (b) at a temperature of −10 to 75° C.;
d. reacting the product of (c) with an alkyl mercaptan and a base or with a metal salt of an alkyl mercaptan; and
e. reacting the product of (d) with
   1. a carbamoyl chloride in the presence of a base;
   2. phosgene followed by reaction with an amine; or
   3. an isocyanate, optionally in the presence of a basic catalyst; in water or organic solvents such as acetone, methylene chloride, methyl ethyl ketone, methyl isobutyl ketone, dimethylformamide, dimethylacetamide, dimethylsulfoxide, tetramethylurea or their mixtures.

3,694,432

2-BENZYLOXYIMINO CYCLIC AMINES

Fred M. Hershenson, Morton Grove, Ill., assignor to G. D. Searle and Company, Chicago, Ill.

Filed March 1, 1971, Ser. No. 119,907
Int. Cl. C07d 27/02, 29/26, 41/04
U.S. Cl. 260—239 B 5 Claims

Cyclic amines having a benzyloxyimino substituent at the 2-position are described herein. They possess anti-hypertensive, anti-protozoal, anti-fungal, and anti-algal activity. The compounds are prepared from the appropriate 2-alkoxy cyclic amine or 2-hydroxyimino cyclic amine.

3,694,433

METHOD FOR THE RECOVERY OF CAPROLACTAM

Leland J. Beckham, Lutz, Fla., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Aug. 27, 1971, Ser. No. 175,740
Int. Cl. C07d 41/06
U.S. Cl. 260—239.3 A 5 Claims

A process comprising the steps of:

a. contacting at a temperature ranging from about 40° C. to about 90° C. a rearrangement mass comprising ε-caprolactam and sulfuric acid with the following reactants:
   (i) substantially water-free ammonium sulfate in an amount ranging from about 0.9 to about 1.1 moles per mole of sulfuric acid present in said rearrangement mass, and
   (ii) an aqueous ammonium bisulfate solution saturated at a temperature within the range of 20° to 55° C., the amount of said aqueous solution being such as to dissolve at the contacting temperature the ammonium bisulfate formed by the reaction of the sulfuric acid component of the rearrangement mass with said ammonium sulfate, to thereby afford an ε-caprolactam phase and an aqueous ammonium bisulfate phase;
b. separating said ε-caprolactam phase;
c. cooling said aqueous ammonium bisulfate phase to a tem-

perature within the range of 20° to 55° C. to thereby afford crystalline ammonium bisulfate and a saturated aqueous ammonium bisulfate solution;

d. recovering and recycling said saturated aqueous solution to step a).

3,694,434

2,6-DIORGANO-1,5-DITHIA-2,6-DIAZACYCLOOCTANE-3,4,7,8-TETRAONES AND THEIR MANUFACTURE

Wendell Gary Phillips, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 18, 1971, Ser. No. 190,257
Int. Cl. C07d 93/36
U.S. Cl. 260—239.3 R 16 Claims

2,6-Diorgano-1,5-dithia-2,6-diazacyclooctane-3,4,7,8-tetranones are prepared from oxamoyl sulfenyl chlorides by elimination of HCl in the presence of an HCl scavenger. These compounds are pesticidally active and particularly useful as pre-emergent herbicides.

3,694,435

4,4,8,8-TETRACHLORO-2,6-DIORGANO-15-DITHIA-2,6-DIAZACYCLO-OCTANE-3,7-DIONES AND THEIR MANUFACTURE

Wendell Gary Phillips, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 26, 1971, Ser. No. 192,646
Int. Cl. C07d 93/36
U.S. Cl. 260—239.3 R 17 Claims

4,4,8,8-Tetrachloro-2,6-diorgano-1,5-dithia-2,6-diazacyclooctane-3,7-diones are prepared from dichloromethane sulfenyl chlorides by elimination of HCl in the presence of an HCl scavenger. These compounds are pesticidally active and particularly useful as selective herbicides.

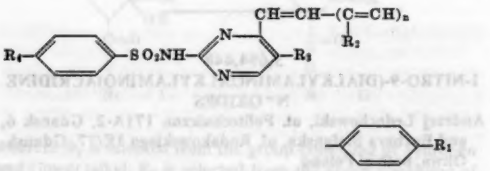
3,694,436

SUBSTITUTED 2-(BENZENESULFONAMIDO)-PYRIMIDINES

Isamu Saikawa; Yasumasa Matubara, and Takako Hori, all of Toyama, Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

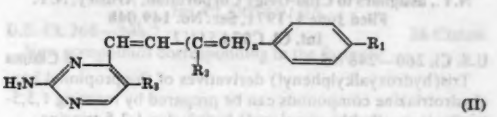
Filed March 2, 1970, Ser. No. 15,951
Int. Cl. C07d 51/42
U.S. Cl. 260—240 D 7 Claims

Novel sulfonamide derivatives having a pyrimidine ring, represented by the formula (I),



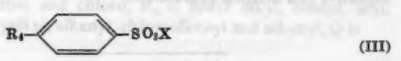
(I)

wherein R_1, R_3 and R_4 are a hydrogen atom, a lower alkyl group having one to five carbon atoms or a halogen atom; R_2 is a hydrogen atom or a lower alkyl group having one to five carbon atoms; n is 0 or 1. The sulfonamide derivatives have potent blood sugar lowering activity and are prepared by reacting a pyrimidine compound of the formula (II),



(II)

wherein R_1, R_2, R_3 and n have the same meanings as defined above, with a sulfonamide compound of the formula (III),



(III)

wherein R_4 has the same meaning as defined above and X is a halogen atom or a reactive group capable of forming a $-SO_2NH-$ group, in the absence or presence of a solvent, and in the presence of an acylation catalyst.

3,694,437

PROCESS FOR PREPARING CEPHALOSPORIN COMPOUNDS

Billy G. Jackson, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 754,992, Aug. 23, 1968, abandoned. This application Aug. 19, 1970, Ser. No. 65,238
Int. Cl. C07d 99/24
U.S. Cl. 260—243 C 8 Claims

New silylated cephalosporins from silylamide compounds and an improved process for preparing cephalosporin antibiotics, for example, cephaloglycin, cephalexin, and cephalothin where the acylation of a silylated cephalosporin nucleus is involved.

3,694,438

Patent Not Issued For This Number

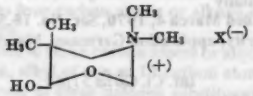
3,694,439

TETRAHYDRO 1,3-OXAZINIUM COMPOUNDS

Lloyd D. Taylor, Everett, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 687,347, Dec. 1, 1967, Pat. No. 3,576,795. This application Aug. 3, 1970, Ser. No. 60,350
Int. Cl. C07d 87/06
U.S. Cl. 260—244 R 2 Claims

A compound of the formula



wherein X is an anion of an acid with an ionization constant of at least 10^{-2}, has been found to provide a hardening function when utilized in conjunction with a polymeric material containing —SH, —NH_2, and/or —OH functional groups.

3,694,440

TRIS(HYDROXYALKYLPHENYL) DERIVATIVES OF THIOPROPIONYL HEXAHYDROTRIAZINE

Martin Knell, Ossining, N.Y., and David H. Steinberg, Bronx, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 1, 1971, Ser. No. 149,048
Int. Cl. C07d 55/12
U.S. Cl. 260—248 NS 5 Claims

Tris(hydroxyalkylphenyl) derivatives of thiopropionyl hexahydrotriazine compounds can be prepared by reacting 1,3,5-tris(hydroxyethylthiopropionyl)-hexahydro-1,3,5-triazine with 4-hydroxy-3,5-dialkylphenylpropionyl chloride or benzoyl chloride. An example of such compounds is 1,3,5-tris(4′-hydroxy-3′,5′-di-tert-butylphenylpropionyloxyethylthiopropionyl)-hexahydro-1,3,5-triazine. These compounds are useful as stabilizers of organic substrates subject to oxidative and thermal degradation.

3,694,441

PYRIMIDOTRIAZINONE COMPOUNDS

David William Dunwell, 27 Alexandra Ave., Camberley, Surrey, and Delme Evans, 7 Springwoods, Sandhurst, Berkshire, both of England

Filed March 5, 1971, Ser. No. 121,597
Int. Cl. C07d 57/12
U.S. Cl. 260—249.5 10 Claims

Substituted 1H,4H-pyrimido[2,1-c]-[1,2,4]triazin-6-ones are prepared by reacting an appropriately substituted thiazolo- or oxazolo-[3,2-a]pyrimidin-5-one with a hydrazino compound. The resultant pyrimidotriazinones possess antifungal and anthelmintic activity.

3,694,442

SUBSTITUTED TETRAHYDRO-1H-PYRAZOLO[1,2-B]PHTHALAZINES

William J. Houlihan, 15 Raynold Road, Mountain Lakes, N.J.

Continuation-in-part of Ser. No. 561,745, June 30, 1966, Pat. No. 3,549,620. This application July 28, 1970, Ser. No. 58,987
Int. Cl. C07d 51/06
U.S. Cl. 260—250 A 19 Claims

Substituted tetrahydro-1H-pyrazolo[1,2-b]phthalazine, e.g., 5-p-chlorophenyl-2,3,4,10-tetrahydro-1H-pyrazolo[1,2-b]phthalazine, are prepared by the reduction of the corresponding phthalazinone or by ring closure of the corresponding 2-(3-hydroxypropyl)phthalazine and are useful as central nervous system depressants.

3,694,443

PROCESS FOR THE PRODUCTION OF 4-CHLORO-6,7-PHTHALOYLQUINAZOLINE DERIVATIVES

Manfred Ruske, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed March 4, 1970, Ser. No. 16,568
Claims priority, application Germany, March 6, 1969, P 19 11 305.4
Int. Cl. C07d 51/48
U.S. Cl. 260—251 Q 5 Claims

Production of 4-chloro-6,7-phthaloylquinazoline derivatives by reaction of 2-acylamino-3-cyanoanthraquinones with hydrogen chloride and phosgene in the presence of N,N-dialkyl carboxylic amides. The 4-chloro-6,7-phthaloylquinazoline derivatives are valuable dyestuff intermediates.

3,694,444

FLUOROPYRIMIDINES

Erich Klauke, Odenthal-Hahnenberg, and Hans-Samuel Bien, Burscheid, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 1, 1967, Ser. No. 679,652
Claims priority, application Germany, Dec. 16, 1966, F 50972
Int. Cl. C07d 51/36
U.S. Cl. 260—251 R 1 Claim

A process of the preparation of fluoro substituted pyrimidines useful as lubricants, dyestuffs, pharamaceutical agents and pesticides which includes the isolated monofluorotrichloro- and difluoro-dichloropyrimidines by reacting polyhalopyrimidines with hydrofluoric acid under increased temperature and pressure.

3,694,445

Patent Not Issued For This Number

3,694,446

5-(SUBSTITUTED-BENZYL)-BENZOCYCLOHEPTENES AND-1-BENZOTHIEPINES

William J. Houlihan, 15 Raymald Road, Mountain Lakes, N.J., and Jeffrey Nadelson, Troy Hills Village, 1480 Route 46, Parsippany, N.J.

Filed Feb. 24, 1970, Ser. No. 13,799
Int. Cl. C07d 51/70
U.S. Cl. 260—268 BC 5 Claims

5-(Substituted-benzyl)-benzocycloheptenes and -1-benzothiepines, e.g., 5-(2-methoxy-α- 4-methyl-1-piperazinyl benzyl)-5H-benzocyclohepten-5-ol are prepared by treating a substituted benzyl lithium compound with a benzocycloheptanone or -1-benzothiepinone. The compounds are useful as diuretics.

3,694,447

COMPLEXES OF PHOSPHANILIC ACID AND 9-AMINO-3-NITROACRIDINE

Joseph F. Pagano, Paoli, Pa., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.

Filed March 10, 1970, Ser. No. 18,312
Int. Cl. C07d 37/24
U.S. Cl. 260—279 R 3 Claims

Complexes of phosphanilic acid and an aminoacridine possess broad-spectrum antibacterial and antifungal activity when used topically. The preferred complex is a 1:1 complex of phosphanilic acid and 9-amino-3-nitroacridine.

3,694,448

1-NITRO-9-(DIALKYLAMINOALKYLAMINO)ACRIDINE N^{w} OXIDES

Andrzej Ledochowski, ul. Politechniczna 171A-2, Gdansk 6, and Barbara Stefanska, ul. Rodakowskiego 1E/17, Gdansk-Oliwa, both of Poland

Filed Sept. 2, 1969, Ser. No. 854,608
Claims priority, application Poland, Aug. 31, 1968, P 128855
Int. Cl. C07d 37/18
U.S. Cl. 260—279 A 2 Claims

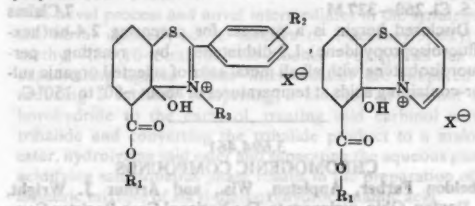
The N-oxides of 1-nitro-9-(dialkylaminoalkylamino)-acridine which are antitumor agents having low toxicity are produced by oxidizing the corresponding N^{10} of N oxides.

3,694,449
2-SUBSTITUTED -3A,4,5,6,7,7A-HEXAHYDRO-5A,6,7,8,9,9A-HEXAHYDRO-9 A-HYDROXYPYRIDO (2,1-B) BENZOTHIAZOLIUM HALIDES

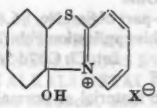
Peter H. L. Wei, 430 Ridge Lane, Springfield, Pa.

Filed March 17, 1971, Ser. No. 125,410
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 B 3 Claims

Novel pharmacologically active compounds have been prepared of the formulas



and



wherein R_1 and R_3 are selected from the group consisting of hydrogen and (lower)alkyl; R_2 is selected from the group consisting of hydrogen, (lower)alkyl, nitro, halogen, (lower)alkoxy, hydroxy and

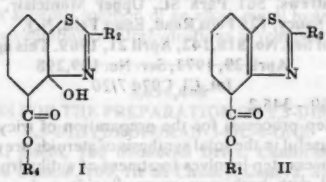
wherein R_4 and R_5 when not concatenated are independently selected from the group consisting of hydrogen and (lower)alkyl and when concatenated form a radical selected from the group consisting of piperazinyl, piperidinyl, pyrrolidinyl and morpholinyl; X is halogen.

3,694,450
2-SUBSTITUTED-4,5,6,7-TETRAHYDROBENZOTHIAZOLE-4-CARBOXYLIC ACIDS AND THEIR ALKYL ESTERS

Peter H. L. Wei, Springfield, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed March 17, 1971, Ser. No. 125,413
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 C 3 Claims

Novel pharmacologically active compounds have been prepared which have the general formulas:



I II

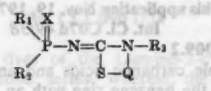
wherein R_1 is selected from the group consisting of hydrogen and (lower)alkyl; R_2 is selected from the group consisting of phenyl, halophenyl and (lower)alkylphenyl; alkylphenyl; R_3 is selected from the group consisting of phenyl, halophenyl, (lower)alkylphenyl, pyridyl, amino, anilino, hydrazino, benzylidenehydrazino, halobenzylidenehydrazino, nitrobenzylidenehydrazino and (lower) alkylbenzylidenehydrazino; R_4 is (lower)alkyl; and the pharmaceutically acceptable salts thereof.

3,694,451
CERTAIN 2-PHOSPHORYLIMINO-4-THIAZOLINES

Alexander Mihailovski, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Filed March 26, 1970, Ser. No. 23,051
Int. Cl. C07d *91/26*
U.S. Cl. 260—306.7 26 Claims

New compounds corresponding to the formula



wherein X is oxygen and sulfur; R_1 is lower alkyl, lower alkoxy, lower alkylthio and chloro; R_2 is lower alkyl, lower alkoxy, lower alkylthio and chloro; R_3 is lower alkyl, benzyl, aryl, lower alkoxyalkyl, alkenyl, chloroalkenyl and alkynyl; Q is

in which R_4 and R_5 are independently hydrogen, lower alkyl, halogen and nitro.

3,694,452
PROCESS FOR PREPARING A 1-(LOWER ALKYL)-5-NITRO-2-IMIDAZOLECARBOXIMIDATE ESTER

Christos George Papaioannou, Somerset, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed April 17, 1970, Ser. No. 29,686
Int. Cl. C07d *49/30*
U.S. Cl. 260—309 2 Claims

This disclosure describes a multistep process for the preparation of certain 2-amino-5-[1-(lower alkyl)-5-nitro-2-imidazoyl]-1,3,4-thiadiazoles; the products of the process being useful as antibacterial and antiprotozoal agents.

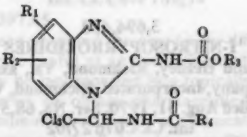
3,694,453
Patent Not Issued For This Number

3,694,454
1-[1'-CARBOXYLIC ACYLAMINO-2',2',2'-TRICHLORO)-ETHYL]-2-(HYDROCARBYLOXYCARBONYL-AMINO)-BENZIMIDAZOLES

Walter Ost, Klaus Thomas, and Dietrich Jerchel, all of Ingelheim am Rhine, Germany, assignors to C.H. Boehringer Sohn, Ingelheim am Rhine, Germany

Filed July 17, 1970, Ser. No. 55,989
Int. Cl. C07d *49/38*
U.S. Cl. 260—309.2 33 Claims

Compounds of the formula



wherein

R_1 and R_2 are each hydrogen, chlorine, bromine, alkyl of one to four carbon atoms or alkoxy of one to four carbon atoms,

R_3 is alkyl of one to three carbon atoms or allyl, and

R_4 is hydrogen, alkyl of one to 17 carbon atoms which may have from one to three halogen substituents or one 2,4-dichlorophenoxy substituent attached thereto, phenyl, alkenyl of two to 17 carbon atoms and 1 to 3 double bonds, or alkoxy of one to 12 carbon atoms;

the compounds are useful as prophylactic as well as curative biocidal agents, especially as fungicidal agents against all types

of Levow; Tobias E. fungi, such as mildew, plant rust, Fusaria and the like.

3,694,455

ACYLOXYALKYL AMIDOBENZIMIDAZOLES

George L. Dunn, Wayne, Pa., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.

Division of Ser. No. 738,842, June 21, 1968, Pat. No. 3,578,676. This application Nov. 19, 1970, Ser. No. 91,227

Int. Cl. C07d *49/38*

U.S. Cl. 260—309.2 **5 Claims**

Benzimidazole carbamic acids and amidobenzimidazoles, substituted on the benzene ring with an acyloxyalkyl group, are prepared by esterifying the corresponding hydroxyalkyl compound. The products are anthelmintic agents.

3,694,456

1-DISUBSTITUTED AMINOPYRAZOLES

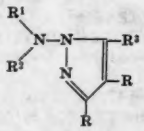
Shunsaku Noguchi; Shoji Kishimoto, both of Osaka, and Kiyohisa Kawai, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

Filed May 8, 1970, Ser. No. 35,926

Int. Cl. C07d *49/20*

U.S. Cl. 260—310 R **10 Claims**

1-(Disubstituted-amino)pyrazole compounds are provided herein of the formula:



wherein each of R^1 and R^2 stands for lower alkyl or R^1 and R^2, taken together with the adjacent N-atom form morpholino, piperidino, pyrrolidino, N-methylpiperazino, N-benzylpiperazino and N-phenylpiperazino, R's, which are the same or different from each other, stand for hydrogen, alkyl having one to ten carbon atoms, phenyl, naphthyl, phenyl or naphthyl substituted by halogen or lower alkyl, respectively, and R^3 stands for hydrogen, lower alkyl, N,N-di-loweralkylaminoethyl, N-morpholinomethyl, N-piperidinomethyl, N-pyrrolidinomethyl, N-methylpiperazinomethyl, N-benzylpiperazinomethyl and N-phenylpiperazinomethyl. The above compounds as well as the pharmaceutically acceptable salts thereof are useful as analgesics, antipyretics and mild muscle relaxants.

3,694,457

Patent Not Issued For This Number

3,694,458

1-NITROSOPYRROLIDINES

Grover Cleveland Helsley, Richmond, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Filed Aug. 31, 1970, Ser. No. 68,590

Int. Cl. C07d *27/02*

U.S. Cl. 260—326.5 L **7 Claims**

1-Nitrosopyrrolidines having anticonvulsant activity are disclosed. The compounds are prepared from 3-(mono- and disubstituted)pyrrolidines by nitrosation. Substituents in the 3-position are selected from a combination of hydroxyl, α-phenyl-α-hydroxybenzyl, α-alkyl-α-hydroxybenzyl, phenyl, trifluoromethylphenyl and phenoxy radicals.

3,694,459

Patent Not Issued For This Number

3,694,460

PREPARATION OF 2,4-BIS(HEXAFLUOROISOPROPYLIDENE) 1, 3-DITHIETANE BY REACTION OF PERFLUOROISOBUTENE WITH SELECTED ALKALI METAL SALTS

David C. England; Maynard S. Raasch, and William Arthur Sheppard, all of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 16, 1971, Ser. No. 115,745

Int. Cl. C07d *69/00*

U.S. Cl. 260—327 M **7 Claims**

Disclosed herein is a process for preparing 2,4-bis(hexafluoroisopropylidene)-1,3-dithietane by reacting perfluoroisobutene with alkali metal salts of selected organic sulfur-containing acids at temperatures of about −80° to 150° C.

3,694,461

CHROMOGENIC COMPOUNDS

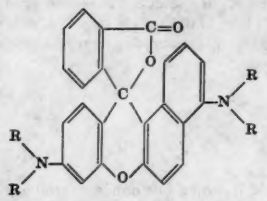
Sheldon Farber, Appleton, Wis., and Arthur J. Wright, Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Continuation-in-part of Ser. No. 86,644, Nov. 30, 1970, Pat. No. 3,654,314. This application Feb. 7, 1972, Ser. No. 224,269

Int. Cl. C07d *5/34*

U.S. Cl. 260—335 **3 Claims**

A chromogenic material of normally colorless form is disclosed having the structural formula:



wherein each R is hydrogen or an alkyl radical having one to four carbon atoms.

3,694,462

BENZO[b]PYRYLIUM DYE SALTS

Patrick J. Grisdale, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed March 2, 1970, Ser. No. 15,832

Int. Cl. C07d *7/24*

U.S. Cl. 260—345.2 **4 Claims**

A class of novel benzo[b]pyrylium dye salts having a partially saturated, bicyclic ring system fused thereto is described.

3,694,463

3-VINYL-CYCLO PENTA (FM$_1$)BENZOPYRANS

David Andrews, 561 Park St., Upper Montclair, N.J., and Gabriel Saucy, 125 Fells Road, Essex Fells, N.J.

Division of Ser. No. 818,142, April 21, 1969. This application April 29, 1971, Ser. No. 139,298

Int. Cl. C07d *7/20*

U.S. Cl. 260—345.2 **5 Claims**

Multi-step processes for the preparation of tricyclic intermediates useful in the total synthesis of steroids are described. A first process step involves treatment of a dihydroxy, divinyl compound with both manganese dioxide and an amine to produce a Mannich base intermediate. The resulting Mannich base intermediate may be reduced catalytically and then coupled with a cyclic dione to yield a tricyclic keto diene. This compound can be reduced to yield a tricyclic hydroxy compound useful as an intermediate in the total synthesis of steroidal compounds having known valuable pharmacological properties. Alternatively, it is possible to directly couple the Mannich base with the cyclic diketo compound followed by reduction and catalytic hydrogenation to yield the tricyclic hydroxy compound.

3,694,464

PREPARATION OF 1-ACETOXY-3-(ALKYL)-6,6,9-TRIMETHYL-7,8,9,10-TETRAHYDRO-6H-DIBENZO[b, d] PYRAN ISOMERS

Herbert S. Aaron, Baltimore, and Clyde Parker Ferguson, Jr., Bel Air, both of Md., assignors to The United States of America as represented by the Secretary of the Army

Filed July 10, 1968, Ser. No. 743,907
Int. Cl. C07d 7/04
U.S. Cl. 260—345.3 6 Claims

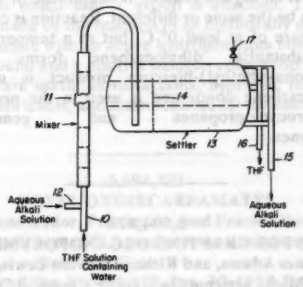
A novel process and novel intermediates in the synthesis of the novel optically-active isomers of 1-acetoxy-3(alkyl)-9-methyl-7,8,9,10-tetrahydro-6H-dibenzo [b,d]pyran as incapacitating agents. Those intermediates are prepared by reducing a mixture comprising a ketone, an alcohol and borohydride to the carbinol, treating said carbinol with a trihalide and converting the trihalide product to a malonic ester, hydrolyzing said ester and separating the aqueous phase, acidifying said aqueous phase results in the preparation of an isomeric mixture of alkyl-dialkoxyhydrocinnamic acid.

3,694,465

METHOD FOR CONCENTRATION OF AQUEOUS TETRAHYDROFURAN SOLUTIONS BY EXTRACTION WITH AQUEOUS ALKALI METAL HYDROXIDE

Hisashi Kisaki; Shunsuke Mabuchi, and Toshikatsu Mizuno, all of Yamaguchi, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Tsuno-gun, Yamaguchi-ken, Japan

Filed Aug. 11, 1970, Ser. No. 63,024
Claims priority, application Japan, Aug. 14, 1969, 44/63840
Int. Cl. C08d 5/02
U.S. Cl. 260—346.1 6 Claims



A method for producing anhydrous tetrahydrofuran from an aqueous solution of tetrahydrofuran which comprises contacting an aqueous solution of an alkali metal hydroxide with the aqueous solution of tetrahydrofuran to remove the water.

3,694,466

PROCESS FOR THE PREPARATION OF 2,5-DIMETHYL-4,5-DIHYDROFURAN-3-OL-4-ONE

George H. Buchi, 100 Memorial Drive, Cambridge, Mass.; Edouard Demole, 100, rte de Chancy, Geneva, Switzerland; Albert Eschenmoser, 9, Bergstrasse, Kusnacht, Zurich, Switzerland, and Alan F. Thomas, 16, Ch. de l'Esplanade, Vernier, Geneva, Switzerland

Division of Ser. No. 736,268, June 12, 1968, Pat. No. 3,558,714. This application Feb. 19, 1970, Ser. No. 14,873
Claims priority, application Switzerland, June 16, 1967, 8620/67
Int. Cl. C07d 5/10
U.S. Cl. 260—347.8 6 Claims

2,5-dimethyl-4,5-dihydrofuran-3-ol-4-one is prepared by catalytic cyclisation of hexane-3,4-diol-2,5-dione.

3,694,467

ANTHRAQUINONE DYES

Karl Maier, Ludwigshafen am Rhine, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Continuation of Ser. No. 272,233, April 11, 1963, abandoned. This application Feb. 19, 1970, Ser. No. 12,841
Claims priority, application Germany, April 19, 1962, B 66 910
Int. Cl. C09b 1/54
U.S. Cl. 260—380 4 Claims

Anthraquinone dyes of the 1-amino-2-hydroxyalkoxy-4-hydroxyanthraquinone series, wherein the hydroxyalkoxy group contains four to nine carbon atoms, said dyes being useful for dyeing and printing synthetic fibers and plastics.

3,694,468

Patent Not Issued For This Number

3,694,469

Patent Not Issued For This Number

3,694,470

NOVEL 18-NOR ANDROSTANE DERIVATIVES

Piero Gomarasca, and Carlo Scolastico, both of Milan, Italy, assignors to Laboratorio Prodotti Biologici Braglia, Milan, Italy

Filed March 18, 1970, Ser. No. 20,830
Claims priority, application France, Oct. 13, 1969, 6934926
Int. Cl. C07c 169/22
U.S. Cl. 260—397.45 3 Claims

This invention relates to novel steroids of the androstane series, hydroxylated in position 11.

These steroids are prepared by reacting an α or β-11-hydroxy-18-Nor-17β-methyl-17α-alkyl androsta-4,13-diene-3-one with ethyl formiate in solution in a solvent, to form the corresponding hydroxymethylene derivative. This latter compound is then reacted with 2,3-dichloro-5,6-dicyane-p-benzoquinone in solution in dioxane to obtain the corresponding 2-fornyl-$\Delta^{1,4,13}$-11-hydroxy-18-Nor-17β-methyl-17α-alkyl.

The compounds of this invention may be used in particular as medicaments with an anti-androgen action.

3,694,471

17-VALERATE ESTER OF 6α,9α-DIFLUOROHYDROCORTISONE, ITS COMPOSITIONS AND USE AS AN ANTI-INFLAMMATORY AGENT

Alberto Ercoli, Milan, and Rinaldo Gardi, Carate Brianza, both of Italy, assignors to Warner-Lambert Pharmaceutical Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 707,934, Feb. 26, 1968, abandoned. This application June 8, 1970, Ser. No. 44,574
Int. Cl. C07c 169/34
U.S. Cl. 260—397.45 1 Claim

There has been prepared the new 6α,9α-difluorohydrocortisone 17-valerate useful as an anti-inflammatory agent. This compound may be incorporated in a topically suitable pharmaceutical carrier to obtain pharmaceutical compositions which may be administered locally as ointments, creams or lotions for the treatment of inflammatory conditions.

3,694,472

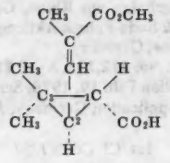
SYNTHESIS OF PYRETHRIC ACID

Jacques Martel, Bondy, and Jean Buendia, Fontenay-Sous-Bois, both of France, assignors to Roussel-Uclaf, Paris, France

Filed May 12, 1970, Ser. No. 36,675
Int. Cl. C07c 69/74
U.S. Cl. 260—468 P 5 Claims

A novel process for the preparation of 3,3-dimethyl-2-(2'-methoxycarbonyl-trans 1'-propenyl)-1-cyclopropane carbox-

ylic (1R,2R) acid or d-trans pyrethric (1R,2R) acid of the formula



I

by reacting 3,3-dimethyl-2-formyl-1-cyclopropanecarboxylic (1R,2R) acid or a salt thereof with methyl propionate under anhydrous basic conditions.

3,694,473

HIGHER ALKANO YL-PROPANEDIOL-(1,3)-2-TRIMETHYLAMMONIUM-ETHYL PHOSPHATES

Hansjorg E. Eibl, Gabelsberger-Strasse 4, and Otto Westphal, In der Rothe 14, both of Freiburg, Breisgau, Germany

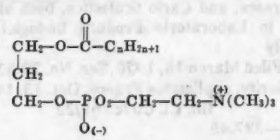
Filed July 2, 1971, Ser. No. 159,524

Claims priority, application Germany, July 6, 1970, P 20 33 359.9

Int. Cl. A23j 7/00

U.S. Cl. 260—403 5 Claims

Compounds of the formula



wherein *n* is an integer from 16 to 25, inclusive; the compounds are useful as immunologic adjuvants.

3,694,474

HIGHER ALKANO YL-PROPANEDIOL-(1,3)-PHOSPHORIC ACID-CHOLINE ESTERS

Hansjorg Eibl, and Otto Westphal, both of Freiburg, Breisgau, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim/Rhine, Germany

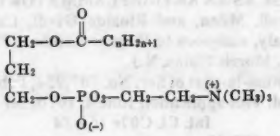
Filed July 2, 1971, Ser. No. 159,552

Claims priority, application Germany, July 6, 1970, P 20 33 361.3

Int. Cl. A23j 7/00

U.S. Cl. 260—403 4 Claims

Compounds of the formula



wherein *n* is an integer from 7 to 14, inclusive; the compounds are useful as immuno-suppressants.

3,694,475

TITANIUM COMPOUNDS

David Whiteley Brook, Teesside, and Raymond Ward, Coxhoe, both of England, assignors to British Titan Products Company Limited, Durham, England

Filed March 9, 1970, Ser. No. 17,938

Claims priority, application Great Britain, March 18, 1969, 14,049/69

Int. Cl. C07f 7/28

U.S. Cl. 260—429.5 15 Claims

A titanium chelate useful as a gelling or stabilizing agent for aqueous suspensions which is the reaction product of monoethanolamine, a titanium orthoester and at least one other chelating agent. The other chelating agent is selected from alkanolamine other than monoethanolamine, a beta-diketone or alpha-hydroxy carboxylic acids.

3,694,476

(6-METHOXY-2-NAPTHYL) CADMIUM HALIDE

Francisco Alvarez, Sunnyvale, Calif., assignor to Syntex Corporation, Apartado, Panama

Filed Dec. 4, 1970, Ser. No. 95,376

Int. Cl. C07f 3/08

U.S. Cl. 260—429 R 2 Claims

2-(6-Methoxy-2-naphthyl)propionic acid is prepared by reacting di(6-methoxy-2-naphthyl)-cadmium or 6-methoxy-2-naphthylcadmium halide with a lower alkyl 2-halopropionate in a suitable solvent to form a lower alkyl 2-(6-methoxy-2-naphthyl)propionate and hydrolyzing the ester group thereof. The product has anti-inflammatory, analgesic and anti-pyretic activities.

3,694,477

METHOD FOR MAKING ORGANO(FLUOROMETHYL) MERCURY COMPOUNDS

Dietmar Seyferth, Lexington; Steven P. Hopper, Cambridge, both of Mass., and Kirk V. Darragh, Nyack, N.Y., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Nov. 3, 1970, Ser. No. 86,637

Int. Cl. C07f 3/12

U.S. Cl. 260—433 11 Claims

Organo(fluorohalomethyl) mercury compounds are prepared by fluorinating with an organomercuric fluoride, a compound of the formula:

$$RHgCX_3$$

wherein R is an organo radical, X is chlorine or bromine and the X's can be the same or different. Reaction is carried out at a temperature of at least 0° C. but at a temperature below which substantial dihalocarbene forms. The organo(fluorohalomethyl)-mercury product is useful as a fluorohalocarbene donor and is used in the preparation of gem-difluorocyclopropanes and gem-fluorohalocyclopropanes.

3,694,478

PROCESS FOR GRAFTING ORGANOPOLYSILOXANES

Patrick James Adams, and Richard Newton Lewis, both of Tucumseh, Mich., assignors to Stauffer Chemical Company, New York, N.Y.

Continuation of Ser. No. 789,607, Jan. 7, 1969, abandoned. This application Nov. 23, 1970, Ser. No. 92,133

Int. Cl. C07f 7/08; C08g 47/10

U.S. Cl. 260—448.2 E 7 Claims

An improved process for grafting organopolysiloxanes which comprises the gradual addition of a free-radical initiator to a heated mixture containing an organopolysiloxane and an unsaturated organic monomer in order to control the temperature. By such gradual addition, the temperature is maintained in the optimum range for the preparation of modified organopolysiloxanes.

3,694,479

BIS (TRIORGANOSILYL) PHOSPHATE COMPOSITIONS

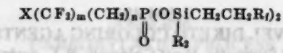
E. D. Groenhof, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 858,886, Sept. 17, 1969, Pat. No. 3,639,239. This application March 29, 1971, Ser. No. 129,181

Int. Cl. C07f 7/08

U.S. Cl. 260—488.2 N 3 Claims

Disiloxy derivatives of fluoroalkyl acid phosphates of the general formula



are disclosed as corrosion inhibitors for fluorosilicone lubricants.

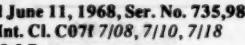
3,694,480

NOVEL ORGANOFUNCTIONAL SILICON COMPOUNDS SUBSTITUTED WITH HALOGEN AND PROCESSES FOR MAKING SAME

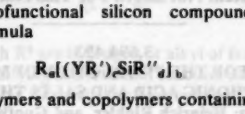
George M. Omietanski, Marietta, Ohio, assignor to Union Carbide Corporation

Filed June 11, 1968, Ser. No. 735,986
Int. Cl. C07f 7/08, 7/10, 7/18
U.S. Cl. 260—448.2 B 26 Claims

Novel organofunctional silicon compounds including silanes of the formula



and siloxane polymers and copolymers containing the unit of the formula



wherein R, R′ and R″ are organic groups, Y is divalent oxygen, divalent sulfur, or divalent nitrogen groups, i.e.,

where R‴ is H or a hydrocarbon radical, and R′ has carbon-bonded halogen attached to the carbon atom adjacent the carbon atom to which said Y group is attached. These compounds are made by the reaction of an olefinically unsaturated silane or siloxane with an active hydrogen atom containing organic compound and a positive halogen compound. The novel compounds are useful as surfactants, hydraulic fluids, water repellants, lubricants, and intermediates for siloxane gums and elastomers.

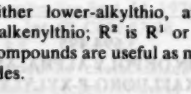
3,694,481

NOVEL OXIMECARBAMATES

Roger Williams Addor, Pennington, and Frank Albert Wagner, Jr., Hopewell, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 701,572, Jan. 30, 1968, Pat. No. 3,632,621. This application March 8, 1971, Ser. No. 122,197
Int. Cl. C07c 119/00
U.S. Cl. 260—453 R 4 Claims

New compounds of the formula:



wherein R^1 is either lower-alkylthio, ar(lower-alkyl)thio, arylthio or lower-alkenylthio; R^2 is R^1 or chloro; and R^3 is lower-alkyl. The compounds are useful as nematocides, insecticides and acaricides.

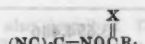
3,694,482

MALONONITRILE OXIME DERIVATIVES

John E. Engelhart, Westfield, N.J., assignor to Esso Research and Engineering Company

Filed April 15, 1970, Ser. No. 28,982
Int. Cl. C07c 154/00, 154/02
U.S. Cl. 260—455 B 4 Claims

Derivatives of malononitrile oxime characterized by the following structural formula:



wherein X can be oxygen or sulfur; R_1 is taken from the group consisting of OR_2, SR_3, NR_4R_5 and C_1–C_{10} alkyl, C_2–C_{10} alkenyl, C_2–C_{10} alkynyl or C_3–C_{10} cycloalkyl; R_2, R_3, R_4 and R_5 can be hydrogen or C_1–C_{10} alkyl, C_2–C_{10} alkenyl, C_2–C_{10} alkynyl or C_3–C_{10} cycloalkyl. The above-mentioned C_1–C_{10} alkyl, C_2–C_{10} alkenyl, C_2–C_{10} alkynyl and C_3–C_{10} cycloalkyl in R_1, R_2, R_3, R_4 and R_5 may be unsubstituted or substituted by halogen, nitrile, nitro, thiocyano, perhaloalkyl, C_1–C_4 alkoxy and C_1–C_4 thioalkyl. These compounds are useful as soil fungicides.

3,694,483

CARBAMYLOXYBENZYLIDENEMALONONITRILE

Roger P. Cahoy, and John Sanjean, both of Overland Park, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Sept. 8, 1970, Ser. No. 70,529
Int. Cl. A01n 9/20; C07c 121/70
U.S. Cl. 260—465 D 5 Claims

The carbamyl derivatives of 4-hydroxy-3,5-di-tert.butyl benzylidenemalononitrile are compounds which possess a high order of activity as miticides, insecticides and fungicides. New compounds of this class, for example, 3,5-di-tert.butyl-4-(3-bromophenylcarbamyloxy)benzylidene-malononitrile, are particularly effective against corn rootworm while possessing less toxicity to warm blooded animals than the most closely related prior art compound.

3,694,484

PROCESS OF PREPARING 3-AMINO-2-CYANO ACRYLAMIDE

Ronald M. Cresswell, 34 Walbrooke Road, Scarsdale, N.Y., and Melvin Schnapper, 41 Homecrest Oval, Yonkers, N.Y.

Continuation-in-part of Ser. No. 651,393, July 6, 1967, Pat. No. 3,487,083. This application Sept. 9, 1969, Ser. No. 856,488
Int. Cl. C07c 121/30
U.S. Cl. 260—465.4 5 Claims

This invention relates to a new use of intermediates and an improved method of preparing amino methylene cyano-acetamide by reacting formamidine base with cyano-acetamide. In addition this invention is directed to reacting amino methylene cyano-acetamide with hydrazine to form 3-amino pyrazole-4-carboxamide which may then be converted to Allopurinol. Allopurinol is a drug useful in the treatment of hyperuricemia.

3,694,485

HYDROCYANATION OF OLEFINS

William C. Drinkard, Jr., Wilmington, Del., and Brian William Taylor, Verona, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 857,535, Sept. 12, 1969, Pat. No. 3,551,474, which is a continuation-in-part of Ser. No. 680,947, Nov. 6, 1967, abandoned. This application April 23, 1970, Ser. No. 43,284
Int. Cl. C07c 121/04, 121/26
U.S. Cl. 260—465.8 R 3 Claims

Process of isomerizing 3-pentenenitriles to 4-pentenenitrile using compounds of iron, or ruthenium having a valence of +2 or less as a catalyst and of adding hydrogen cyanide to carbon-carbon double bonds such as in 4-pentenenitrile at from −25° to 200°C using as catalysts ruthenium or iron compounds having a valence of +2 or less.

3,694,486

Patent Not Issued For This Number

3,694,487

Patent Not Issued For This Number

3,694,488

Patent Not Issued For This Number

3,694,489

PHARMACOLOGICALLY ACTIVE ESTERS AND AMIDES OF N-[3-TRIFLUOROMETHYLPHENYL]-ANTHRANILIC ACID

Karl-Heinz Boltze, Bensberg-Kippekausen; Otfried Brendler, Cologne-Mulheim, and Dietrich Lorenz, Bensberg, all of Germany, assignors to Troponwerke Dinklage & Co., Cologne-Mulheim, Germany

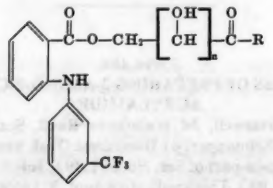
Filed July 16, 1970, Ser. No. 55,564

Claims priority, application Germany, Aug. 1, 1969, P 19 39 111.8

Int. Cl. C07c *103/16*

U.S. Cl. 260—471 R 14 Claims

Compounds of the general formula



in which *n* is 0, 1 or 2 and R represents a hydroxyl group, a low molecular weight straight chained or branched alkoxy group in which the alkyl radical may have individual hydrogen atoms replaced by hydroxyl groups, an amino group or a low molecular weight straight chained or branched mono- or dialkylamino group in which individual hydrogen atoms of the alkyl groups may be replaced by hydroxyl groups.

These compounds have a marked antiinflammatory effect and reduced side effects.

3,694,490

PRODUCTION OF PHENOLIC ESTERS OF AROMATIC ACIDS

Enrique Roberto Witt, and James Patrick Cave, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Filed Nov. 18, 1969, Ser. No. 877,841

Int. Cl. C07c *69/82*

U.S. Cl. 260—475 PN 10 Claims

Process for the esterification of aromatic carboxylic acids with monatomic phenols comprising heating in the liquid phase to a temperature above 275°C. a mixture of the aromatic carboxylic acid with the monoatomic phenol. Catalysts are not necessary but acidic catalysts such as phosphoric acid may be utilized if desired. The esters are monomers that can be used to prepare several types of high performance polymers.

3,694,491

NOVEL DIKETO COLORING AGENTS

Joseph Donald Surmatis, West Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 819,520, April 24, 1969, Pat. No. 3,651,145, which is a division of Ser. No. 648,196, June 23, 1967, Pat. No. 3,478,104. This application Sept. 14, 1971, Ser. No. 180,485

Int. Cl. C07c *49/61*, *69/14*, *69/78*

U.S. Cl. 260—488 R 3 Claims

Novel C_{40} and C_{50} diketo coloring and pigmenting agents for foodstuffs and the like and a process for their production from hydroxenin including intermediates therein.

3,694,492

Patent Not Issued For This Number

3,694,493

PROCESS FOR THE PRODUCTION OF METHALLYL SULPHONIC ACID AND SALTS THEREOF

Gunter Lorenz; Heinrich Rinkler, and Gunther Nischk, all of Dormagen, Germany, assignors to Fabenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 17, 1969, Ser. No. 867,381

Claims priority, application Germany, Oct. 24, 1968, P 18 04 833.4

Int. Cl. C07c *143/16*

U.S. Cl. 260—513 R 1 Claim

Process for the production of methallyl sulfonic acid and salts thereof by reaction of isobutylene and a complex of sulfur trioxide and an N,N-dialkyl substituted amide of an aliphatic carboxylic acid or a N-alkyl substituted lactam wherein at least 1 mol of isobutylene is used for 1 mol of sulfur trioxide. The methallyl sulfonic acid and their salts are comonomers in the polymerization of olefinic compounds.

3,694,494

CARBOXYLATION PROCESS

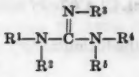
Edwin L. Patmore, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 784,945, Dec. 18, 1968, Pat. No. 3,591,628. This application Feb. 3, 1971, Ser. No. 119,428

Int. Cl. C07c *51/02*, *61/28*

U.S. Cl. 260—514 B 5 Claims

A method of carboxylating indene, cyclopentadiene, fluorene and hydrocarbyl cyanide by contacting said compounds with carbon dioxide under substantially anhydrous conditions in the presence of a guanidine of the formula:



where R^1 through R^5 are hydrogen or alkyl of from one to five carbons and acidifying the resultant reaction mixture to form the carboxylic acid derivative and recovering said derivative therefrom.

3,694,495

PREPARATION OF POLY ALPHA, ALPHA 2,3,5,6-HEXAFLUORO-P-XYLYLENE

William P. Norris, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Division of Ser. No. 723,908, April 24, 1968, Pat. No. 3,626,032. This application Dec. 2, 1970, Ser. No. 94,539

Int. Cl. C07c *63/52*

U.S. Cl. 260—515 A 2 Claims

A method for the preparation of new highly fluorinated p-xylylene monomers and polymers which have excellent chemical and thermal properties.

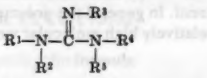
3,694,496

CARBOXYLATION PROCESS

Edwin L. Patmore, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 784,945, Dec. 18, 1968. This application Feb. 3, 1971, Ser. No. 119,427
Int. Cl. C07c 63/44
U.S. Cl. 260—515 R 3 Claims

A method of carboxylating indene, cyclopentadiene, fluorene and hydrocarbyl cyanide by contacting said compounds with carbon dioxide under substantially anhydrous conditions in the presence of a guanidine of the formula:



where R^1 through R^5 are hydrogen or alkyl of from one to five carbons and acidifying the resultant reaction mixture to form the carboxylic acid derivative and recovering said derivative therefrom.

3,694,497

METHOD OF PREPARING AMMONIUM TEREPHTHALATE BY ISOMERIZATION, OR DISPROPORTIONATION OF POTASSIUM SALTS DERIVED FROM BENZENE-CARBOXYLIC ACIDS

Vladimir Rod; Vladimir Bazant, and Zdenek Sir, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed Nov. 19, 1969, Ser. No. 878,266
Claims priority, application Czechoslovakia, Nov. 22, 1968, 8000-68
Int. Cl. C07c 63/28
U.S. Cl. 260—515 P 4 Claims

Multiple-stage process of isomerizing, or disproportionating potassium salts derived from benzene-carboxylic acids, and ultimate processing of the reaction product containing more than 40 per cent by weight of the terephthalic component, to obtain ammonium terephthalate, wherein the raw reaction product is extracted by a filtrate left after refining precipitation of ammonium terephthalate by ammonia and carbon dioxide, which filtrate contains free ammonium ions and free ammonia. The thus arisen solid phase containing di-ammonium terephthalate is then separated from the reaction mixture, dissolved in water, the thus arisen solution being used, after separation of an insoluble residue, for the preparation of pure di-ammonium terephthalate.

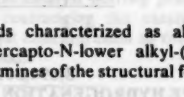
3,694,498

ALPHA, ALPHA-DIMETHYL-BETA, BETA-DIMERCAPTO-N-LOWER ALKYL-(PHENYL AND SUBSTITUTED PHENYL) ETHYLAMINES

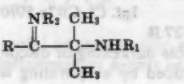
Arthur B. Ash, Lathrup Village, and Calvin L. Stevens, Detroit, both of Mich., assignors to Ash Stevens, Inc., Detroit, Mich.

Division of Ser. No. 809,012, March 20, 1969, Pat. No. 3,578,682. This application Sept. 11, 1970, Ser. No. 71,375
Int. Cl. C07c 87/28
U.S. Cl. 260—570.5 S 5 Claims

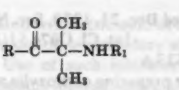
Dimercapto compounds characterized as alpha, alpha-dimethyl-beta, beta-dimercapto-N-lower alkyl-(phenyl and substituted phenyl) ethylamines of the structural formula:

 (I)

where R is phenyl and substituted phenyl and R_1 is lower alkyl containing one to eight carbon atoms are described. Trithiolane condensation derivatives of the dimercapto compounds (I) prepared by oxidation with the elimination of hydrogen sulfide are also described. The dimercapto compounds (I) are generally prepared by reacting an alpha, alpha-dimethyl-beta-N-lower alkyl imine-(phenyl and substituted phenyl) ethylamine of the structural formula:

 (III)

where R and R_1 are as in the dimercapto compounds (I) and R_2 is a lower alkyl group containing one to eight carbon atoms with hydrogen sulfide in an inert anhydrous polar organic solvent for the imino compounds (III) at temperatures less than the decomposition temperature of the dimercapto compounds (I) and until (I) is formed and precipitates from the reaction mixture. The imino compounds (III) are preferably prepared by reacting a compound of the structural formula:

 (II)

with a lower alkyl amine (R_2-NH_2) containing one to eight carbon atoms. The product dimercapto compounds (I) and trithiolanes are particularly useful as antimalarials in mammals.

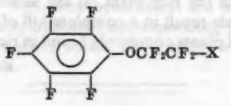
3,694,499

PROCESS FOR PREPARING PERFLUORO 3-PHENOXYPROPIONIC ACID

Richard W. Quarles, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed March 18, 1970, Ser. No. 20,806
Int. Cl. C07c 65/02
U.S. Cl. 260—521 A 6 Claims

Novel compounds of the formula



are provided wherein X is —COF, —COCl, —COOH, —COOR, —COOM, —$CONR_1R_2$, or —CN wherein R is an alkyl radical, M is a metal, and R_1 and R_2 are independently hydrogen or alkyl radicals. Also provided are novel compounds of the formula $C_6F_5OCF_2CF_2CF_2OCF(CF_3)$—X wherein X is as defined above. These novel compounds are useful in the preparation of perfluoro(3-phenoxypropyl vinyl ether) monomer, said monomer being useful in the preparation of copolymers having improved oxidative stability.

3,694,500

CATALYTIC OXIDATION OF POLYMETHYLSTILBENE COMPOUNDS

Benjamin Weinstein, Morganville, and Burton Maxwell Rein, East Brunswick, both of N.J., assignors to Mobil Oil Corporation

Filed Sept. 26, 1969, Ser. No. 861,451
Int. Cl. C07c 63/02
U.S. Cl. 260—524 R 4 Claims

The catalytic oxidation of a polymethyl-substituted stilbene compound with molecular oxygen in a liquid reaction mixture containing a lower fatty acid (e.g., acetic acid) as the reaction solvent, a soluble cobalt compound as the oxidation catalyst and preferably a reaction activator (e.g., methyl ethyl ketone, etc.) produces a benzene polycarboxylic acid as exemplified by the oxidation of 4,4′-dimethylstilbene to terephthalic acid.

3,694,501

PROCESS FOR PRODUCING SODIUM GLUCONATE

Jack Ziffer, Milwaukee, Wis., assignor to Pabst Brewing Company, Milwaukee, Wis.

Filed March 4, 1971, Ser. No. 121,201
Int. Cl. C07c *59/06*
U.S. Cl. 260—527 R 8 Claims

The undesirable darkening or discoloration of solid sodium gluconate produced by evaporating water from an aqueous solution thereof is reduced or eliminated by introducing into such a solution a sufficient amount of sodium sulfite to inhibit discoloration of the resultant solid product.

3,694,502

HYDROCARBOXYLATION PROCESS

Kestutis A. Keblys, Southfield, Mich., and Ronald L. Shubkin, Oak Park, Mich., assignors to Ethyl Corporation, New York, N.Y.

Filed Dec. 21, 1970, Ser. No. 100,355
Int. Cl. C07c *51/14*
U.S. Cl. 260—533 A 22 Claims

A process for preparing carboxylic acids from olefinic compounds having up to seven carbon atoms, CO and H_2O using a cobalt catalyst in the presence of a ketone or ether, a pyridine promoter, and hydrocarbon is disclosed.

3,694,503

DIFFERENTIAL HERBICIDAL ACID ANHYDRIDES OF IMIDIC ACIDS AND LOWER ALKANOIC ACIDS

Alexander Galat, 1980 South Ocean Drive, Hallandale, Fla.

Filed March 1, 1971, Ser. No. 119,848
Int. Cl. C07c *119/00*
U.S. Cl. 260—545 R 5 Claims

1-Acyloxy 1-(halophenyl)-imino) alkanes, such as 1-propionyloxy 1-((3′,4′-dichlorophenyl)-imino) propane, exhibit a strong differential herbicidal effect. While these compounds exhibit an extremely low to zero phytotoxic action when applied to the rice plant, at the same application rate these compounds result in a complete kill of a wide variety of other species of plants commonly found in rice fields as weeds.

3,694,504

N-(3-CHLOROBENZENESULFONYL) ACETAMIDINES

John C. Danilewicz, Sandwich, England; Michael Szelke, Great Mongeham, near Deal Ireland, assignors to Pfizer Inc., New York, N.Y.

Filed May 6, 1970, Ser. No. 35,295
Claims priority, application Great Britain, May 19, 1969, 25,372/69
Int. Cl. C07c *143/78*
U.S. Cl. 260—556 AR 6 Claims

Novel N-(3-chlorobenzenesulfonyl)acetamidines useful in the treatment of hypertension are disclosed.

3,694,505

METHOD OF PRODUCING O-AMINOBENZAMIDE

Jan Magnus Bakke; Harald Erik Heikman; Christer Lennart Hakanson, all of Karlskoga, and John Martin Nilsson, Solna, all of Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed Jan. 26, 1970, Ser. No. 5,921
Claims priority, application Sweden, Jan. 28, 1969, 1081/69
Int. Cl. C07c *103/28*
U.S. Cl. 260—558 A 3 Claims

o-Aminobenazmide is prepared by the reaction in the gaseous phase of o-nitrotoluene and ammonia at a temperature about 500 to 650°C.

3,694,506

PROCESS FOR PREPARING N-(2-CARBOXAMIDOETHYL) ACRYLAMIDE

Simone Franco; Alvaro Leoni, both of Ferrania/Cario Montenotte, and Manlio Marini, Savona, all of Italy, assignors to Ferrania, s.p.a. Milan, Italy

Division of Ser. No. 585,735, Oct. 11, 1966, abandoned. This application Feb. 17, 1969, Ser. No. 813,363
Claims priority, application Italy, Oct. 23, 1965, 24353
Int. Cl. C07c *103/00*
U.S. Cl. 260—561 N 12 Claims

This invention relates to a new and efficient process for the preparation of N-(2-carboxamidoethyl) acrylamide and polymers thereof. In general the polymeric products of this invention are relatively high molecular weight polymers.

3,694,507

PROCESS FOR THE PREPARATION OF PERFLUORO-2,5-DIAZAHEXA-2,4-DIENE

Hans-Joachim Scholl, Cologne, and Erich Klauke, Odenthal-Hahnenberg, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed March 11, 1971, Ser. No. 123,475
Claims priority, application Germany, March 20, 1970, P 20 13 433.2
Int. Cl. C07c *119/00*
U.S. Cl. 260—566 D 4 Claims

Perfluoro-2,5-diazahexa-2,4-diene (CF_3—N=CF—CF=N—CF_3) is prepared by reacting N,N′-bis(trifluoromethyl) tetrafluoroethylene diamine (CF_3—NH—CF_2—CF_2—NH—CF_3) with sodium fluoride at about 20° to about 70° C.

3,694,508

PURIFICATION OF P-AMINOPHENOL

Frank A. Baron, Short Hills; Roland G. Benner, New Providence, and Alan E. Weinberg, Verona, all of N.J., assignors to Mallinckott Chemical Works, Lodi, N.J.

Filed Oct. 16, 1969, Ser. No. 867,082
Int. Cl. C07c *91/44*
U.S. Cl. 260—575 4 Claims

A process for the purification of crude p-aminophenol comprising admixing the crude p-aminophenol with a water-immiscible solvent which is substantially a non-solvent for p-aminophenol having a boiling point above 40°C. and a melting point below 50°C. and selected from the group consisting of esters or hydrocarbons, and mixtures thereof and subsequently separating purified p-aminophenol from said mixture.

3,694,509

SELECTIVE HYDROGENATION OF NITROAROMATICS TO THE CORRESPONDING N-ARYLHYDROXYLAMINE

Paul N. Rylander, Newark; Irene M. Karpenko, Irvington, and George R. Pond, Newark, all of N.J., assignors to Engelhard Minerals & Chemicals Corporation

Filed April 16, 1970, Ser. No. 29,055
Int. Cl. C07c *87/48*
U.S. Cl. 260—578 2 Claims

Nitroaromatics are selectively hydrogenated in neutral

media in the presence of precious metal catalysts and in the presence of dimethylsulfoxide to produce N-arylhydroxylamines in high yield.

3,694,510

ALAPHATIC POLYAMINOETHER COMPOUNDS

Friedrich Moller; Gunter Hauptmann, both of Leverkusen, Germany, and Heinz-Wolfgang Patzelt, Carnegie, Pa., assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

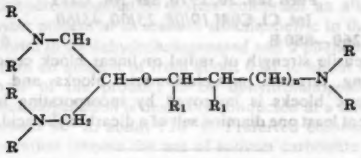
Filed Oct. 20, 1969, Ser. No. 867,901

Claims priority, application Germany, Oct. 28, 1968, P 18 04 361.3

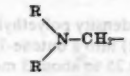
Int. Cl. C07c 93/02

U.S. Cl. 260—584 C 4 Claims

Amino compounds having the formula



wherein n is 0 or 1 and the R substituents, which may be the same or different, represent methyl or ethyl radicals, the R_1 substituents representing hydrogen atoms or a hydrogen atom and a methyl, ethyl or



radical in cases where n is 0 but only hydrogen atoms in cases where n is 1 may be employed in the catalyzed polyurethane forming reaction between compounds containing hydrogen atoms reactive with —NCO groups and organic polyisocyanates.

3,694,511

PROCESS FOR THE HYDROGENATION OF CYCLOALKANE HYDROPEROXIDES

Jacques Nouvel, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Nov. 20, 1969, Ser. No. 878,543

Claims priority, application France, Nov. 21, 1968, 68174736

Int. Cl. C07c 29/00, 45/00

U.S. Cl. 260—586 R 7 Claims

Cycloalkane hydroperoxides are hydrogenated so that it is possible to avoid the disappearance of group VIII metal catalyst and to maintain the catalyst activity practically indefinitely by periodically rearranging the catalyst bed to transfer zones of low catalyst concentration to the later contacted parts of the catalyst bed.

3,694,512

TETRAHYDRO-CYCLOPROPA NAPHTHALENES

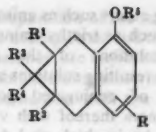
Venkatachala L. Narayanan, Hightstown, N.J., assignor to E. R. Squibb and Sons, Inc., New York, N.Y.

Filed Sept. 18, 1970, Ser. No. 73,668

Int. Cl. C07c 39/14

U.S. Cl. 260—619 F 2 Claims

Compounds are provided having the structure



These compounds are useful as antiparasitic agents, antibacterial agents, and anti-inflammatory agents as well as surfact active agents.

3,694,513

DIRECT NITRATION OF ALKYLPHENOLS WITH NITRIC ACID

Stephen W. Tobey, Sudbury, Mass., and Marilyn Z. Lourandos, Ashland, Mass., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 8, 1970, Ser. No. 44,666

Int. Cl. C07c 79/24

U.S. Cl. 260—622 R 8 Claims

Alkylphenols are nitrated with nitric acid in the presence of a secondary or tertiary alcohol, a secondary alkyl nitrate, an aldehyde or a ketone. Use of such inhibitor decreases the quantity of oxidation products formed, especially quinone formation, and increases the conversion of the starting phenols to the desired nitrated products.

3,694,514

10-BROMOALKYL-ANTHRACENES

Paul N. Craig, Ambler, and Charles L. Zirkle, Berwyn, both of Pa., assignors to Smith, Kline & French Laboratories, Philadelphia, Pa.

Division of Ser. No. 742,171, July 3, 1968, which is a continuation-in-part of Ser. No. 631,584, April 18, 1967, abandoned, which is a continuation-in-part of Ser. No. 526,975, Feb. 14, 1966, abandoned. This application March 5, 1971, Ser. No. 121,540

Int. Cl. C07c 25/00, 25/14

U.S. Cl. 260—649 F 2 Claims

10-Bromoalkyl-anthracenes wherein the nucleus is substituted by chlorine, methyl, trifluoromethyl, methylthio, methylsulfonyl or N,N-dimethylsulfamyl are useful as intermediates for the preparation of corresponding 10-aminoalkyl-9,10-dihydroanthracenes which have utility as tranquilizers and antidepressants.

3,694,515

HALPHENYLLITHIUM INITIATORS FOR CONJUGATED DIENE POLYMERIZATION

William J. Trepka, and Richard J. Sonnenfeld, both of c/o Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 3, 1970, Ser. No. 60,610

Int. Cl. C07f 1/02; C08d 3/04

U.S. Cl. 260—665 R 6 Claims

A method of polymerizing conjugated dienes which employs a halophenyllithium initiator prepared from the interreaction of an alkyllithium and a bromoiodobenzene is disclosed.

3,694,516

PREPARATION OF HYDROCARBON SOLVENT SOLUTIONS OF ORGANOLITHIUM COMPOUNDS

Robert C. Morrison, and Conrad W. Kamienski, both of Gastonia, N.C., assignors to Lithium Corporation of America, New York, N.Y.

Filed Oct. 5, 1970, Ser. No. 78,203

Int. Cl. C07f 1/02; C08d 3/04

U.S. Cl. 260—665 R 25 Claims

Method of preparing hydrocarbon solvent solutions of organolithium compounds in which solutions such as benzene or heptane solutions of di- and poly-lithio adducts of polyisoprenes or polybutadienes containing strongly solvating ethers such as dimethyl ether or tetrahydrofuran are treated

with weakly solvating ethers such as anisole, or weakly solvating tertiary amines such as triethylamine, to effect displacement from said solutions of the dimethyl ether or tetrahydrofuran. The resulting solutions are useful as catalysts in the production of conjugated polyene hydrocarbon polymers or copolymers thereof with vinyl-substituted aromatic hydrocarbons, having high cis-1,4 contents, as well as vinyl-substituted aromatic hydrocarbon polymers.

3,694,517

ISOMERIZATION OF 5-VINYLBICYCLO[2.2.1]HEPT-2-ENES

Wolfgang Schneider, Brecksville, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed June 14, 1971, Ser. No. 153,098. The portion of the term of this patent subsequent to July 20, 1988, has been disclaimed.

Int. Cl. C07c *5/28*

U.S. Cl. 260—666 PY **6 Claims**

5-Vinylbicyclo[2.2.1]hept-2-enes heated in the presence of a titanium catalyst system are isomerized to 5-ethylidenebicyclo[2.2.1]hept-2-enes. The catalyst system of this invention comprises a titanium compound, a Group IA, IIA or IIIA metal and an aluminum halide. The catalyst system is highly efficient and capable of rapidly isomerizing 5-vinylbicyclo[2.2.1]hept-2-enes. 5-Ethylidenebicyclo[2.2.1]hept-2-enes are useful comonomers for polymerization with α-olefins such as ethylene and propylene.

3,694,518

DEHYDROCOUPLING PROCESS

Raymond A. Franz, 463 Goethe, Kirkwood, Mo.; Herbert J. Gebhart, Jr., 433 Adams Avenue, Ferguson, Mo., and Philip D. Montgomery, 20 Graeler Drive, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 393, Jan. 2, 1970, abandoned. This application Dec. 8, 1970, Ser. No. 96,238

Int. Cl. C07c *1/18*

U.S. Cl. 260—668 C **13 Claims**

A vapor phase process for converting toluene and/or toluene derivatives in the presence of oxygen and a halogen to stilbene and/or stilbene derivatives.

3,694,519

Patent Not Issued For This Number

3,694,520

Patent Not Issued For This Number

3,694,521

CHLOROSULFONATED BLOCK COPOLYMERS

Alfred W. Shaw, Moraga, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed July 31, 1970, Ser. No. 60,145

Int. Cl. C08f *19/04, 19/08*

U.S. Cl. 260—878 B **6 Claims**

Block copolymers are provided which have the properties of a vulcanized polymer without chemical crosslinking. These block copolymers comprise chlorosulfonated derivatives of block polymers having alternate monovinyl arene polymer blocks and chlorosulfonated polymer blocks of the group consisting of polyethylene and hydrogenated polybutadiene.

3,694,522

PROCESS FOR PRODUCING A AROMATIC VINYL POLYMER COMPOSITONS

Masami Tsuruta, Odawara; Shinji Ito, and Ichiro Otsuka, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Sept. 29, 1970, Ser. No. 76,625

Claims priority, application Japan, Oct. 4, 1969, 44/78953

Int. Cl. C08f *15/40, 45/68*

U.S. Cl. 260—878 R **10 Claims**

Aromatic vinyl polymer compositions are produced by dissolving 1 to 20 parts by weight of an ethylene-propylene-nonconjugated diene terpolymer rubber and from 5 to 50 percent by weight based on said terpolymer rubber of a polymer having the general formula:

$$X(-CH_2-\underset{\underset{HC=CH_2}{|}}{CH}-)_nX$$

wherein X is hydrogen, C_2H_4OH or COOH and n is an average polymerization degree of 10 to 100 in 100 parts by weight of an aromatic vinyl monomer, prepolymerizing the solution by bulk-polymerization and then completing the polymerization by bulk-polymerization or suspension polymerization.

3,694,523

DIAMINE SALTS OF DICARBOXYLIC ACIDS AS ADDITIVES FOR BLOCK POLYMERS

Kent W. Rollmann, and Harold V. Wood, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Jan. 30, 1970, Ser. No. 7,211

Int. Cl. C08f *19/08, 25/00, 45/60*

U.S. Cl. 260—880 B **6 Claims**

The tensile strength of radial or linear block copolymers containing terminal non-elastomeric blocks and central elastomeric blocks is improved by incorporating into the polymer at least one diamine salt of a dicarboxylic acid.

3,694,524

BLENDS OF LOW DENSITY POLYETHYLENE AND BUTENE/ETHYLENE COPOLYMERS AND HIGH TEAR STRENGTH BLOWN FILM MADE THEREFROM

Harold G. Tinger, Pittsford, and Edward A. Colombo, Brooklyn, both of N.Y., assignors to Mobil Oil Corporation

Filed May 7, 1971, Ser. No. 141,381

Int. Cl. C08f *29/12*

U.S. Cl. 260—897 A **8 Claims**

By incorporating low density polyethylene (e.g., above 5 to about 15 weight percent) into a butene-1/ethylene copolymer containing from about 0.25 to about 3 mole percent ethylene, a resin blend is provided that is extrudable at substantially high extrusion rates to a blown tubular film of substantially high tear strength.

3,694,525

VINYL CHLORIDE POLYMER COMPOSITIONS

Hiroshi Horino, and Masato Matsuo, both of Kawasaki, Japan, assignors to The Japanese Geon Company, Ltd., Tokyo, Japan

Filed June 25, 1971, Ser. No. 156,995

Claims priority, application Japan, June 29, 1970, 45/55938

Int. Cl. C08f *29/24*

U.S. Cl. 260—899 **4 Claims**

A vinyl chloride polymer composition comprising (I) a vinyl chloride polymer and (II) a polymer selected from the group consisting of the homopolymers of tricyclo (5, 2, 1, $0^{2,6}$) decane-8-yl-methacrylate and the copolymers of tricyclo (5, 2, 1, $0^{2,6}$) decane-8-yl-methacrylate and methyl methacrylate.

3,694,526

HYDROCARBON PHOSPHONATES

John B. Siddall, Palo Alto, Calif., and Jean Pierre Calame, Fillanden, Switzerland, assignors to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 800,267, Feb. 18, 1969, which is a continuation-in-part of Ser. No. 618,321, Feb. 24, 1967, abandoned. This application July 14, 1969, Ser. No. 841,609

Int. Cl. C07f *9/40;* **A01n** *9/36*

U.S. Cl. 260—956 **12 Claims**

Hydrocarbon phosphonates containing from 12 to 17 carbon atoms in the hydrocarbon backbone chain and lower alkyl

substituents at the C–3,7 and 11 positions and unsaturation or saturation between C–2,3, C–6,7 and C–10, 11 and/or substituents at each of positions C–2,3,6,7,10 and 11 which are arthropod maturation inhibitors.

3,694,527

PROCESS FOR THE PREPARATION OF BIS (BETHACHLOROETHYL) VINYL PHOSPHONATES

Harold E. Sorstokke, New City, N.Y.; Walter Stamm, Tarrytown, N.Y., and Eugene H. Uhing, Ridgewood, N.J., assignors to Stauffer Chemical Company, New York, N.Y.

Continuation of Ser. No. 629,065, April 7, 1967, Pat. No. 3,548,040. This application Feb. 9, 1970, Ser. No. 14,705

Int. Cl. C07f 9/40

U.S. Cl. 260—986 **10 Claims**

Olefinically unsaturated alkyl phosphonates suitable for use as copolymerizing agents, terminating agents and crosslinking agents formed by the selected dehydrohalogenation of a beta-halo-alkyl phosphonate corresponding to the product desired through the use of an improved dehydrohalogenation system. This dehydrohalogenation system comprises an alkali metal carbonate present in an amount stoichiometric to the amount of material to be dehydrohalogenated and a phenolic catalyst present in an amount of from about 0.01 to about 0.2 moles per mole of the product to be dehydrohalogenated. The dehydrohalogenation is desirably conducted at a temperature from about 90° to about 130° C. Preferred embodiments of this invention involve the use of sodium carbonate or bicarbonate and a phenolic catalyst, such as nitrophenol, or chlorophenol.

3,694,528

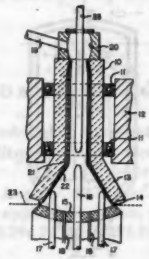
METHOD FOR MAKING SPHERICAL BEADS

Charles W. Schott, 4769 Barone Drive, Pittsburgh, Pa.

Filed May 11, 1970, Ser. No. 35,962

Int. Cl. B01j 2/12

U.S. Cl. 264—8 **5 Claims**



A method is provided for pelletizing molten materials which consists in feeding the material to be pelletized downwardly through a vertical refractory tube through a controlled atmosphere and discharging the same horizontally from a rotating circular edge across the surface of a fluid coolant.

3,694,529

METHOD FOR MOLDING ARTICLES

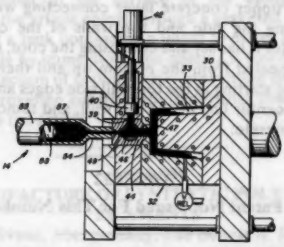
Roy C. Josephsen, Hillsdale, and Clifford L. Weir, Wayne, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed April 2, 1970, Ser. No. 25,140

Int. Cl. B29d 27/00; B29f 1/06

U.S. Cl. 264—48 **8 Claims**

This disclosure is directed to a method for injection molding. Shot capacity of injection molding machines is increased by providing a low pressure accumulator which can receive a first charge of prepared molding material from a preparation chamber so as to store the first charge during the preparation of a second charge in the preparation chamber. Upon the completion of the preparation of the second charge, both the first charge from the accumulator and the second charge from the preparation chamber are injected into a mold cavity. Molding with foamable molding material is improved by communicating the accumulator with the mold cavity so as to



allow expansion of the foamable molding material into the accumulator from the mold cavity during foaming. Material so received within the accumulator is thereafter recompressed for use as all or part of the first charge for the next subsequent molding cycle.

3,694,530

METHOD OF PRODUCING AN INTEGRAL SKIN POLYURETHANE FOAM

James D. Wolfe, North Canton, Ohio, assignor to The Goodyear Tire & Company, Akron, Ohio

Filed Nov. 17, 1969, Ser. No. 877,464

Int. Cl. B29d 27/04; C08g 22/44

U.S. Cl. 264—48 **1 Claim**

A method of producing integral skin polyurethane foams having densities as low as 1.0 to 3.0 lbs/ft^3 and surfaces which may simulate grain leather. The mold surface is first coated with a release agent, then a skin forming agent and then the foamable polyurethane reaction mixture is cast in the coated mold. Representative examples of the skin forming agents are polyester polyether and polyhydrocarbon polyols of two to 10 hydroyxls, hydroxyl containing polymers having a hydrocarbon, polyester or polyether backbone. The above skin forming agents may be applied to the mold surface by incorporation in a suitable solvent such as a low boiling liquid hydrocarbon or ketone. Polyurethane catalysts may also be added to the film forming agent solution. Another group of film forming agents which may be used are particulate materials which have the ability to absorb at least 0.5 grams of water per gram of material. Representative examples are sodium chloride, diatomaceous earth and talc.

3,694,531

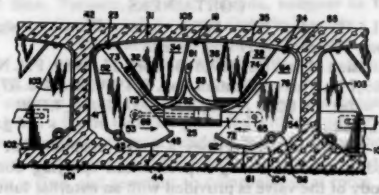
METHOD OF MAKING HOLLOW CONCRETE PANELS

John P. Glass, 79 La Grange Ave., Essington, Pa.

Division of Ser. No. 166,566, Jan. 16, 1962, Pat. No. 3,213,512, and a continuation of Ser. No. 382,910, July 15, 1964, abandoned. This application Oct. 14, 1966, Ser. No. 600,300

Int. Cl. B28b 21/18

U.S. Cl. 264—71 **5 Claims**



A method of making hollow concrete panels comprising pouring a lower concrete layer, placing thereon a hollow mold

core including a top wall and side walls and an open bottom defined by edges, said top wall having side edges and a center line, sealing along said bottom edges by placing gaskets along said bottom edges and pouring concrete on top of the core to press the gaskets against the bottom to prevent fresh concrete from entering said open bottom and locking the core in place, pouring an upper concrete layer connecting with said lower layer, peeling the side and top walls of the core from the concrete after it has set and collapsing the core, said side walls being first peeled from the bottom up and then the top wall being peeled starting at the top wall side edges and progressing toward the center line of the top wall, and removing the core from the concrete.

3,694,532

Patent Not Issued For This Number

3,694,533

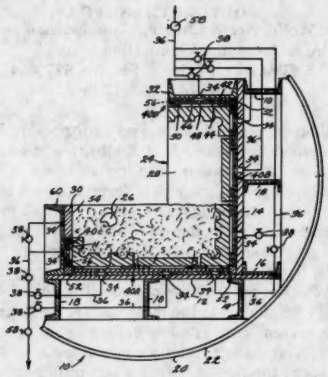
METHOD FOR MAKING SLAB-FACED AND HEADED PANELS INCLUDING CORNERS OR RETURNS

Paul S. Kelsey, 715 South East 8th St., Delray Beach, Fla.

Filed June 23, 1970, Ser. No. 49,148

Int. Cl. B32b *31/06*

U.S. Cl. 264—90 **6 Claims**



There is disclosed a system for top pouring and vertical pouring of concrete or other construction material composition panels faced on one side or both sides with slabs (including full brick) wherein each panel includes a corner or a return at least partly faced with slabs. The casting is accomplished in a special, angulated casting box having the surfaces where slabs are to be located covered with vacuum plate inserts which are, in effect, combined resilient gaskets for preventing backing composition soilage of slab faces and means for holding slabs against the mold as the mold is moved or disposed to facilitate backing composition pouring.

3,694,534

METHOD OF FITTING PRESSURIZED SPRAYING CONTAINERS

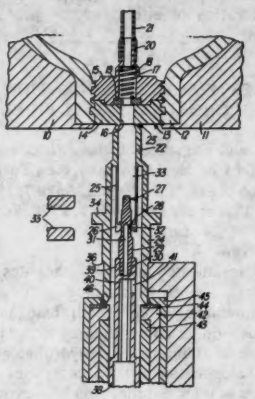
Yves Le Troadec, Mont-Saint-Aignon, France, assignor to Rhone-Poulenc S.A., Paris, France

Division of Ser. No. 817,818, April 21, 1969, Pat. No. 3,605,791. This application Nov. 5, 1970, Ser. No. 87,362

Int. Cl. B29c *17/07*; B65b *3/04, 7/28, 43/00*

U.S. Cl. 264—98 **2 Claims**

The specification describes a valve assembly for and a method of manufacturing a pressurized spraying container. The body of the valve is provided with an external tubular extension or sleeve in which is temporarily located the valve member. The sleeve is used to guide fluid under pressure into the container and may also be used during the blow molding of the container. When the container is filled, the valve member is forced through the sleeve into engagement with its valve



seat, where it is retained by an already positioned spring, and the sleeve is detached.

3,694,535

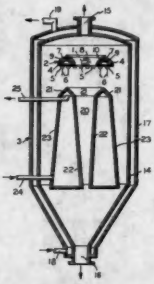
PROCESS AND APPARATUS FOR REMOVING VOLATILE SUBSTANCES FROM VISCOUS COMPOSITIONS

Koji Kimoto, Kamakura, Kanagawa-Pref., and Yoshinari Yamagisawa, Yokohama, Kanagawa-Pref., both of Japan, assignors to Toyo Koatsu Industries, Incorporated, Tokyo, Japan

Continuation of Ser. No. 765,890, Oct. 8, 1968, abandoned. This application Oct. 15, 1970, Ser. No. 90,233

Int. Cl. B01d *1/22*; B29c *25/00*

U.S. Cl. 264—102 **7 Claims**



A process for removing volatile substances from viscous compositions, for example, removing volatile solvent and unreacted monomer from polystyrene. The composition is heated to a temperature above the boiling points of the volatile substances at the pressure employed in the operation. The composition is then formed into strands and the strands are impacted against a solid surface. The composition is then caused to flow as a film over a heated surface while the strands and film are exposed to sub-atmospheric pressure.

3,694,536

METHOD OF PREPARING LEAD ARTICLE

George S. Foerster, Midland, Mich., assignor to Dow Chemical Company, Midland, Mich.

Division of Ser. No. 672,715, Oct. 4, 1967, abandoned. This application Feb. 6, 1970, Ser. No. 9,397

Int. Cl. B22f *3/20*

U.S. Cl. 264—111 **2 Claims**

A solid rigid lead article having improved resistance to creep and comprising a consolidated blended admixture of

particulate lead or lead alloy, and, from about 0.5 to 15 percent by volume of solid particulate non-metallic material so intimately and thoroughly dispersed and embedded throughout the article that inter-particle distances between non-metallic particles are substantially not greater than about 10 microns and preferably are less than about 1 micron. The solid particulate material is further characterized as being finer than about 200 mesh, as being solid-insoluble in lead, as having a melting temperature above about 622°F and as being substantially free from gaseous decomposition or evolution below about 622°F. A method of preparing the article also is disclosed.

3,694,537

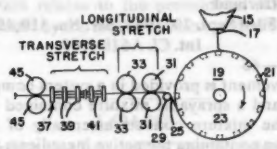
MANUFACTURE OF WEBS HAVING SELECTED ORIENTED PORTIONS

Theodore H. Fairbanks, Liverpool, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 784,383, Dec. 17, 1968, Pat. No. 3,632,716. This application Sept. 18, 1970, Ser. No. 73,435

Int. Cl. B29c *25/00*; B29d *7/22, 7/24*

U.S. Cl. 264—145 **5 Claims**



Manufacture of a thermoplastic polymeric web or film having a predetermined pattern of molecularly oriented portions by completely cooling an extruded flat unbroken steam of molten orientable crystallizable, thermoplastic polymeric material to provide an integral web, with selected spaced areas of such stream being cooled more slowly than the regions adjacent thereto, and thereafter stretching the web along biaxial directions.

3,694,538

METHOD AND APPARATUS FOR COATING WITH PLASTICS

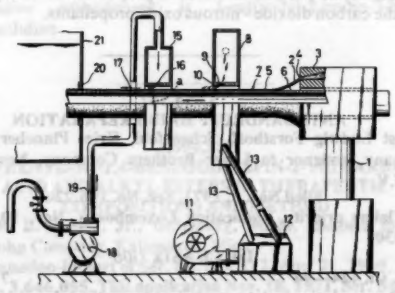
Akio Okamoto, and Taiko Uno, both of Ami-machi, Japan, assignors to Mitsubishi Petrochemical Co. Ltd., Tokyo, Japan

Filed Aug. 17, 1970, Ser. No. 64,254

Claims priority, application Japan, Aug. 18, 1969, 44/64286

Int. Cl. B29c *25/00*; B29f *3/10*; B44d *1/44*

U.S. Cl. 264—173 **6 Claims**



Molten, thermoplastic resin is extruded from an annular die having a central hole through which an elongated article, such as a pipe is moved axially, so as to cost the article with hot resin. The hot resin coating is then precooled by a uniform stream of air issuing from an annular slot in a ring surrounding the coated article. The slot is inclined in the direction of axial movement of the article. The article then enters a similar ring also having a second inclined slot for discharging a uniform stream of cooling water onto the coated article. The direction and force of the stream of air deflects the sprayed stream of water so that it contacts the coated article in a substantial axial direction so that the contact line of the water spray is substantially tangential to the surface of the elongated article. Thereafter, the article enters through a gasketed opening in its side wall, of a tank containing a liquid to effect cooling of the coated article by immersion. The coating is free of defects due to prior deflection of cooling water preventing direct impingement and providing substantially tangential contact zones of the water on the article.

3,694,539

MANUFACTURE OF SYNTHETIC POLYMERIC FILAMENTS

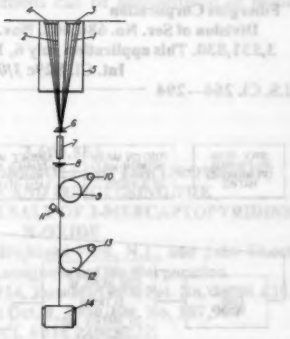
Vincent L. Evans, Abergavenny, and Dennis A. Dyer, Cheltenham, both of England, assignors to British Nylon Spinners Limited, Pontypool, Monmouthshire, England

Filed May 20, 1965, Ser. No. 457,279

Claims priority, application Great Britain, May 28, 1964, 22,054/64

Int. Cl. D01d *7/04*

U.S. Cl. 264—210 F **1 Claim**



A polyamide yarn and a method of producing a polyamide yarn which is substantially stable to length changes due to expansion and contraction in the presence of moisture and/or heat in a freshly drawn and relaxed condition. The yarn is produced by eliminating steam or other moisture conditioning normally associated with the spinning of polyamide yarns and effecting at least a partial drawing of said yarn in the freshly spun state prior to packaging such yarn. The produced yarn suffers substantially no length change, that is, length changes are limited to less than 1 percent in the presence of moisture and/or heat.

3,694,540

METHOD FOR APPLYING BUMPER STRIP TO LUGGAGE PIECE

Jack Sian, Toronto, Ontario, Canada, assignor to Dominion Luggage Co. Limited, Toronto, Ontario, Canada

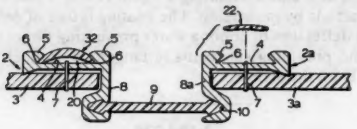
Filed March 2, 1970, Ser. No. 15,804

Int. Cl. B29c *27/20*

U.S. Cl. 264—230 **5 Claims**

A method of applying a bumper strip to a luggage piece which has a frame member provided with an outwardly facing groove therein running around the luggage piece, the method comprising heating an initial length of material with a memory which is firm and resistant to compression at room temperature and which when heated is stretchable at the expense of a reduction in thickness and width and when cooled and unrestrained shrinks to its initial size and shape, the initial length

of material having a width and thickness greater than the width and depth of the groove respectively, stretching the heated length of material to reduce its width to less than the groove width, applying the heated material in the groove in a manner to permit a measure of contraction but to preclude contraction to its initial length, and allowing the material to



cool to contract same lengthwise while expanding same in width and thickness to fill the groove. Further the strip is formed of arcuate cross section and on cooling forms an arcuate cap hiding fasteners located in the groove.

A luggage piece provided with a fastener hiding and groove filling bumper strip.

3,694,541

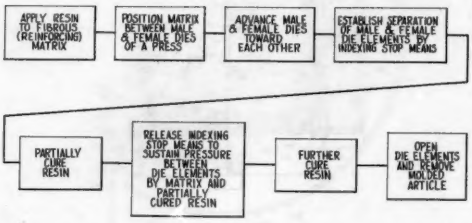
METHOD FOR FORMING A MOLDED ARTICLE

Robert J. Gelin, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation

Division of Ser. No. 686,402, Nov. 29, 1967, Pat. No. 3,531,830. This application July 6, 1970, Ser. No. 52,662

Int. Cl. B29c *3/06*

U.S. Cl. 264—294 **5 Claims**


APPLY RESIN TO FIBROUS (REINFORCING) MATRIX
POSITION MATRIX BETWEEN MALE & FEMALE DIES OF A PRESS
ADVANCE MALE & FEMALE DIES TOWARD EACH OTHER
ESTABLISH SEPARATION OF MALE & FEMALE DIE ELEMENTS BY INDEXING STOP MEANS
PARTIALLY CURE RESIN
RELEASE INDEXING STOP MEANS TO SUSTAIN PRESSURE BETWEEN DIE ELEMENTS BY MATRIX AND PARTIALLY CURED RESIN
FURTHER CURE RESIN
OPEN DIE ELEMENTS AND REMOVE MOLDED ARTICLE

A method of forming an article of formable material wherein the formable material is positioned between registering die elements of a press. The die elements are advanced toward each other to a point of separation determined by releasable indexing stop means. The die elements are retained in the separated aligned condition determined by the indexing stop means for a predetermined time cycle, after which time the stop means are released allowing the full pressure of the press to be applied to the formable material between the die elements to complete the forming operation. The die elements are then separated and the molded article is removed.

ERRATA

For Classes 423—53 and 423—366; 423—465 thru 423—349; 423—300 and 423—466 see:
Patents Nos. 3,694,147 and 3,694,148; 3,694,150 thru 3,694,156; 3,694,171 and 3,694,172

ERRATUM

For Class 264—98 see:
Patent No. 3,694,424

3,694,542

Patent Not Issued For This Number

3,694,543

REPELLENT COMPOSITION

Donald G. Needham, Ramona; Howard B. Walker, Bartlesville, and Luther O. Myers, Jr., Pawhuska, all of Okla., assignors to Phillips Petroleum Company

Filed Jan. 4, 1971, Ser. No. 103,889

Int. Cl. A01n *17/00*

U.S. Cl. 424—30 **18 Claims**

Repellent compositions comprising blends of a repellent in copolymers of ethylene and a 1-olefin containing four to six carbon atoms per molecule. Stable repellent concentrate compositions containing up to 20 weight per cent repellent can be prepared.

3,694,544

Patent Not Issued For This Number

3,694,545

THREE-PHASE AEROSOL SPRAYING SYSTEM

Willi Roth, Strengelbach, Aarau, and Otto Erwin Schenk, Basel, both of Switzerland, assignors to J. R. Geigy A.G., Basel, Switzerland

Filed Sept. 20, 1963, Ser. No. 310,493

Int. Cl. A61k *9/00*

U.S. Cl. 424—45 **3 Claims**

An improvement is provided in a system comprising a pressure vessel and a sprayable mixture contained therein under pressure. The mixture consists essentially of a water-in-oil type emulsion containing the active ingredients to be sprayed, the continuous phase of which emulsion consists of organic solvent containing a propellant which is liquid under pressure. The improvement resides in the fact that the continuous phase of the said emulsion consists essentially of dimethoxymethane.

3,694,546

TWO-PHASE AEROSOL SPRAYING SYSTEM

Willi Roth, Strengelbach, Kanton Aarau, Cameroon, and Otto Erwin Schenk, Basel, both of Switzerland, assignors to J. R. Geigy A. G., Basel, Switzerland

Filed Sept. 20, 1963, Ser. No. 310,470

Int. Cl. A61k *9/10*

U.S. Cl. 424—45 **2 Claims**

The invention concerns a two-phase system, comprising an aerosol pressure container which contains a sprayable mixture therein, consisting essentially of a liquid phase of active ingredients; a propellant, liquefiable under pressure which may be either carbon dioxide and/or nitrous oxide and a liquid dimethoxymethane as an effective propellant dissolving agent for the carbon dioxide - nitrous oxide propellants.

3,694,547

ANTI-DANDRUFF HAIR PREPARATION

Ernst Ludwig Forsthoff, Schenefeld, Kries Pinneberg, Germany, assignor to Lever Brothers Company, New York, N.Y.

Filed Nov. 5, 1971, Ser. No. 196,226

Claims priority, application Luxembourg, Nov. 10, 1970, 62030

Int. Cl. A61k *7/06*

U.S. Cl. 424—94 **7 Claims**

This invention relates to hair preparations having activity against dandruff, containing as an anti-dandruff agent the proteolytic enzyme material rennet. One form of the hair preparations is a lotion, for example an aqueous or alcoholic solution or emulsion of rennet having a pH of from 2 to 9. Rennet may also be incorporated in shampoos, creams, sprays and gels.

3,694,548

ENDURACIDIN DERIVATIVES

Akira Miyake, Nishinomiya; Hidesuke Iwasaki, Itami, and Kenzo Naito, Suita, all of Japan, assignors to Takeda Chemical Industries Ltd., Osaka, Japan

Filed Nov. 22, 1968, Ser. No. 778,300
Claims priority, application Japan, Nov. 22, 1967, 42/7524
Int. Cl. A61k 21/00
U.S. Cl. 424—118 4 Claims

Enduracidin derivatives which have anti-microbial activity are produced by catalytic reduction of Enduracidin or a salt thereof.

3,694,549

NEUTRALIZATION OF THE SYSTEMIC TOXIC PRINCIPLE IN OAK BY FEEDING IRON COMPOUNDS

William H. Livingston, Rte. 1, Box 274, Artesia, N. Mex.

Filed March 16, 1970, Ser. No. 20,074
Int. Cl. A61k 27/00
U.S. Cl. 424—147 1 Claim

This invention relates to the prevention of systemic oak poisoning in cattle by the dietary administration of iron.

3,694,550

Patent Not Issued For This Number

3,694,551

HYPOGLYCEMIC COMPOSITIONS AND METHODS FOR 1-PHENYLSULFONYL-2-IMINO-IMIDAZOLIDINES AND HEXAHYDROPYRIDINES

Henri Dietrich, Ariesheim, Switzerland, assignor to Ciba-Geigy Corporation

Division of Ser. No. 770,102, Oct. 23, 1968, Pat. No. 3,538,085. This application Jan. 30, 1970, Ser. No. 12,483
Int. Cl. A61k 27/00
U.S. Cl. 424—229 8 Claims

1-Phenylsulfonyl-2-imino-imidazolidines and -hexahydropyrimidines, substituted at the heterocyclic ring and substituted or unsubstituted at the phenylring are prepared; these compounds and their pharmaceutically acceptable acid addition salts have hypoglycemic activity; pharmaceutical compositions comprising said compounds and methods of producing hypoglycemic effects in mammals are provided; an illustrative embodiment is 1-sulfanilyl-2-imino-3-butyl-imidazolidine.

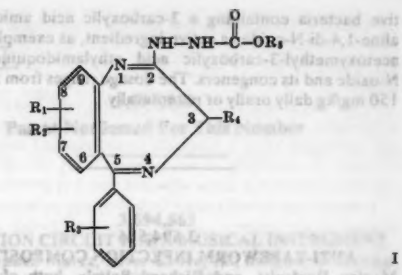
3,694,552

3-(5-PHENYL-3H-1,4-BENZODIAZEPIN-2-YL) CARBAZIC ACID AND ALKYL ESTERS IN THERAPEUTIC COMPOSITIONS AND METHOD

Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 852,112, Aug. 21, 1969, Pat. No. 3,646,055. This application Nov. 18, 1971, Ser. No. 200,203
Int. Cl. A61k 27/00
U.S. Cl. 424—244 11 Claims

Therapeutic compositons for treating humans and animals comprising, in unit dosage form, 3-⅛5-phenyl-3H-1,4-benzodiazepin-2-yl¼ carbazic acid and alkyl esters of the formula:



I

wherein R_1, R_2, and R_3 are selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, halogen, nitro, cyano, trifluoromethyl, and alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkanoylamino, and dialkylamino, in which the carbon chain moieties are of 1 to 3 carbon atoms, inclusive, and wherein R_4 and R_5 is slected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, inclusive, in combination with a pharmaceutical carrier. The compositions have CNS depressant activity and are useful as sedatives, hypnotics and tranquilizers. The compositions are also useful as muscle relaxants and anticonvulsants. The compositions can be administered to human or animal subjects.

3,694,553

A METHOD OF CONTROLLING THE GROWTH OF BACTERIA AND FUNGI USING THE PHENYLHYDRAZINE SALT OF 2-MERCAPTOPYRIDINE-N-OXIDE

Rudiger D. Haugwitz, Highland Park, N.J., and John Uhoch, Jr., Seymour, Conn., assignors to Olin Corporation

Division of Ser. No. 5,914, Jan. 26, 1970, Pat. No. 3,634,438. This application Oct. 8, 1971, Ser. No. 187,904
Int. Cl. A01n 9/00, 9/22
U.S. Cl. 424—263 1 Claim

The phenylhydrazine salt of 2-mercaptopyridine-N-oxide is a novel composition of matter and is useful as a broad spectrum anti-bacterial and anti-fungal agent, especially against Gram-negative organisms.

3,694,554

Patent Not Issued For This Number

3,694,555

3-CARBOXYLIC ACID AMIDO-QUINOXALINE-1,4-DI-N-OXIDES AS ANTIBACTERIAL AGENTS AND PHARMACEUTICAL COMPOSITIONS COMPRISING SAID OXIDES

Kurt Ley; Ulrich Eholzer; Roland Nast, all of c/o Farbenfabriken Bayer AG, Leverkusen; Karl Georg Metzger, and Dieter Fritsche, both of c/o Farbenfabriken Bayer AG, Wuppertal-Elberfeld, all of Germany

Division of Ser. No. 764,613, Oct. 2, 1968, Pat. No. 3,558,624. This application Feb. 16, 1970, Ser. No. 889,773
Claims priority, application Germany, Oct. 4, 1967, F 53366
Int. Cl. A61k 27/00
U.S. Cl. 424—250 40 Claims

Pharmaceutical compositions are provided for controlling bacterial infections caused by gram-positive and gram-nega-

tive bacteria containing a 3-carboxylic acid amido-quinoxaline-1,4-di-N-oxide as active ingredient, as exemplified by 2-acetoxymethyl-3-carboxylic acid ethylamidoquinoxaline-di-N-oxide and its congeners. The dosage ranges from 5 mg/kg to 150 mg/kg daily orally or parenterally.

3,694,556

ANTI-TAPEWORM INFECTION COMPOSITION

Morton Harfenist, and Richard Baltzly, both of Scarsdale, N.Y., assignors to Burroughs Wellcome & Co.

Continuation-in-part of Ser. No. 672,984, Oct. 5, 1967, Pat. No. 3,534,142, which is a continuation-in-part of Ser. No. 353,292, March 19, 1964, abandoned. This application May 25, 1970, Ser. No. 40,427

Claims priority, application Great Britain, March 22, 1963, 11,555/63. The portion of the term of this patent subsequent to Oct. 13, 1987, has been disclaimed.

Int. Cl. A61k *27/00*

U.S. Cl. 424—326 **23 Claims**

An orally ingestible anti-tapeworm infection composition for mammals which comprises a therapeutically effective non-toxic amount of a compound selected from the class consisting of a base of Formula (I)

wherein R is alkyl having from three to eight carbon atoms, R′ is alkyl having from one to 11 carbon atoms, wherein both the Rs attached to the nitrogen atom are the same, and in which the sum of the carbons in Rs and R′ is 12 to 19, and a pharmaceutically acceptable acid addition salt of said base and a therapeutically acceptable carrier therefore.

3,694,557

ANTI-INFLAMMATION COMPOSITIONS CONTAINING TASPINE OR ACID SALTS THEREOF AND METHOD OF USE

Georgia J. Persinos, Rockville, Md., assignor to The Amazon Natural Drug Company, Somerville, N.J.

Filed Oct. 23, 1970, Ser. No. 83,646

Int. Cl. A61k *27/00*

U.S. Cl. 424—279 **8 Claims**

A therapeutic composition and method for the treatment of various forms of inflammation and the like utilizing a therapeutically effective amount of taspine and derivatives thereof as the active ingredient of the composition.

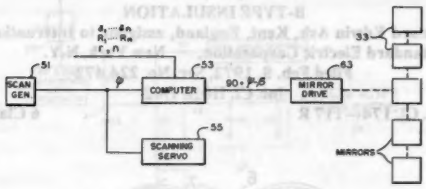
ELECTRICAL

3,694,558

NAVIGATION LIGHT SIMULATOR

Robert M. Eisenberg, Derwood, and George R. Quick, Silver Spring, both of Md., assignors to The Singer Company, New York, N.Y.

Filed April 14, 1971, Ser. No. 133,890
Int. Cl. G09b 9/06
U.S. Cl. 35—10.2 **6 Claims**



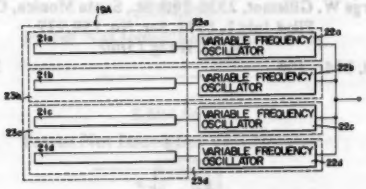
A navigation light simulator, for use in a ship's bridge simulator, in which a spot is scanned across the screen and the light selectively directed to observers on the bridge along lines of sight to the simulated lights is shown. In one embodiment a plurality of shutters placed between the screen and the observers are used to expose the spot when along the proper lines, and in a second embodiment the screen comprises a plurality of rotatable mirrors to direct the spot along the proper lines of sight as the spot scans.

3,694,559

ELECTRONIC MUSICAL INSTRUMENT EMPLOYING VARIABLE RESISTOR FINGERBOARDS

Schoichi Suzuki, and Takatosi Okumura, both of Hamamatsu-shi, Shizuoka-ken, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shzuoko-ken, Japan

Division of Ser. No. 11,983, Feb. 17, 1970, Pat. No. 3,626,350. This application Nov. 4, 1970, Ser. No. 86,955
Int. Cl. G10h 1/02
U.S. Cl. 84—1.01 **5 Claims**



An electronic musical instrument wherein there are several performing units. These performing units are made up of variable resistor fingerboards and variable frequency oscillators acting as tone generators. These oscillators are connected to the respective contact units which determine the frequencies of these oscillators. Tone signals are generated when one or more fingers simultaneously depress the performing units at points on the fingerboards. The relationship between the pressure contact unit and the variable frequency oscillators is so determined as to make the frequencies of the generated tone signals correspond to those of notes which are harmonized into a single chord. By continuously varying the point of finger contact it is possible to produce monophonic chord and portamento signals and to vary the coloring and volume of the musical tone signals on each of them or combinations of them.

3,694,560

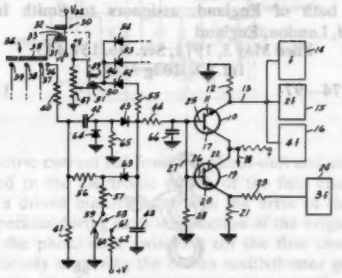
Patent Not Issued For This Number

3,694,561

ANIMATION CIRCUIT FOR A MUSICAL INSTRUMENT

Eugene Stephen Morez, River Grove, Ill., assignor to Chicago Musical Instrument Co., Chicago, Ill.

Filed April 15, 1970, Ser. No. 28,668
Int. Cl. G10h 1/04, 1/06
U.S. Cl. 84—1.13 **10 Claims**



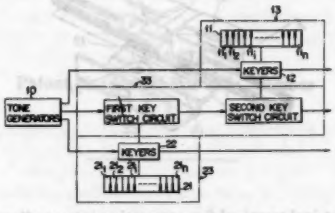
A plurality of tone generators respectively provide a fundamental frequency and even harmonics of the fundamental frequency to a first signal translating circuit of a musical instrument. The musical 12th or third harmonic, of the fundamental frequency is fed to a second transistor circuit which is interconnected with and shares a common output with the first transistor circuit so that the harmonics of the fundamental frequency beat with the added 12th signal component to obtain an animated effect, which simulates a nominally intune pair of vibrating strings. Simultaneous energization of the transistor circuits is provided by a control circuit which is responsive to a direct current keying voltage to render the transistor circuits operative to provide a percussive output envelope, and responsive to an alternating keying voltage to render the transistor circuits operative to provide a sustained output envelope.

3,694,562

AUTOMATIC ENSEMBLE DEVICE FOR A KEYBOARD ELECTRONIC MUSICAL INSTRUMENT

Ryo Hiyma, Shizuoka-ken, Japan, assignor to Nippon Jokki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed April 12, 1971, Ser. No. 133,320
Claims priority, application Japan, April 14, 1970, 45/31216; April 14, 1970, 45/31217
Int. Cl. G10h 1/02
U.S. Cl. 84—1.19 **6 Claims**



On a keyboard electronic musical instrument, when a melody and chords are played, there is automatically

produced an additional line of melody consisting of tones each being a member of the associated chord, thereby accomplishing harmonization to the original melody. The device comprises:

a first key switch circuit including key switches each having a normally open contact connected to the tone generator of the associated tone, a normally closed contact and a transfer contact, the normally closed contact being connected to the transfer contact of a lower adjacent tone key switch; and

a second key switch circuit including key switches each connected to the transfer contact of the key switch of a major second lower tone in the first key switch circuit and to a succeeding stage such as a tone coloring circuit.

3,694,563

CONDUITS

Derek Henry Monds, Windsor, and Brian Charles Wills, Ascot, both of England, assignors to Smith Industries Limited, London, England

Filed May 3, 1971, Ser. No. 139,443

Int. Cl. H02g *3/28*

U.S. Cl. 174—97 **11 Claims**

A conduit having a plurality of bores comprises an indented metal shell which defines the bores and which is corrugated transversely of the bores. The conduit includes a lining for the bores which is both flexible and has physical characteristics selected in accordance with intended use of the conduit. For example, the conduit may be for electric cables and, in such a case, the material constituting the lining is selected so as to provide electrical insulation between the cables and the metal shell, and so as, at least partially, to inhibit ingress of moisture into the bores. The conduit is formed by firstly forming a corrugated tube from a metal strip and thereafter indenting the tube continuously along its length by means of one or more pairs of co-operating profiled rollers.

3,694,564

ELECTRICAL TERMINAL ASSEMBLY

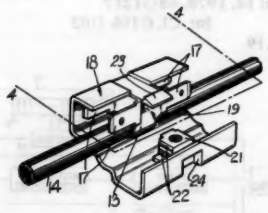
Edward Henry Pater, Bearwood, Warley, England, assignor to Lilly Industries Limited, London, England

Filed Aug. 25, 1970, Ser. No. 66,698

Claims priority, application Great Britain, Aug. 26, 1969, 42,453/69

Int. Cl. H02g *15/08*

U.S. Cl. 174—72 R **3 Claims**



An electrical terminal for connection intermediate the ends of a lead includes a conductive member having a first portion which is deformed in use to grip and make electrical connection to a lead, and second and third spaced portions integral with the first portion and extending generally at right angles to the first portion. The second and third portions are adapted to receive mating connector parts, and the terminal further includes an insulating housing which in use enclosed the conductive member and part of the lead. The insulating housing includes a part which extends between the second and third portions of the conductive member, said part being so shaped that the width of the part increases progressively along the length of the part so that the part wedgingly engages both the second portion and the third portion so as to resist relative movement between the housing and the conductive member.

3,694,565

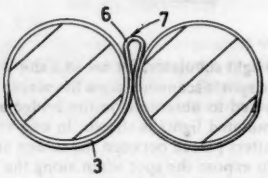
B-TYPE INSULATION

Bernard Edwin Ash, Kent, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 8, 1972, Ser. No. 224,472

Int. Cl. H01b *7/02*

U.S. Cl. 174—117 R **6 Claims**



A pair of electrical conductors are insulated by a common strip of B-shaped material having two lobes at opposite portions around respective conductors and a web connected between the lobes. The insulation is wrapped in opposite directions around the conductors from the longitudinal edges toward the center. The two lobes are brought close together and sealed to the web by adhesive. A portion of the web extends in a loop between the conductors and may be weakened along the length to facilitate severing the connection without damage to the insulation on either conductor. Undesired separation of pairs during jointing is eliminated.

3,694,566

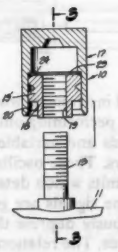
PRESSURE EQUALIZING ACCESSORY INSTALLABLE ALONG THE TOP SIDE OF ELECTRICAL CABLES

John T. Thompson, 244 Loring St., Los Angeles, Calif., and George W. Gillemot, 2331-20th St., Santa Monica, Calif.

Filed July 1, 1971, Ser. No. 158,727

Int. Cl. H02g *15/00*

U.S. Cl. 174—135 **3 Claims**



A pressure equalizing accessory for electrical cables installable along the upper side of the cable sheath. The accessory includes a tubular fitting anchorable to the sheath at intervals therealong and a downwardly opening U-shaped breather having one leg in communication with the upper end of the tubular fitting and the other end vented to the atmosphere and ef-

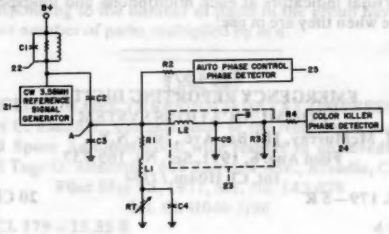
fective to safeguard against the admission of moisture and liquids generally while providing for free air flow as necessary to maintain equalized pressure conditions.

3,694,567

CONSTANT AMPLITUDE PHASE SHIFTER

John M. Kresock, Fort Wayne, Ind., assignor to The Magnovox Company, Ft. Wayne, Ind.

Filed May 11, 1970, Ser. No. 36,018
Int. Cl. H04n 9/44, 9/48
U.S. Cl. 178—5.4 CK 3 Claims



In many color television circuitry designs, a 3.58 mHz reference signal is provided to the automatic phase control phase detector and the color killer phase detector, and in a closed loop color synchronization circuit, the reference signal to the color killer detector is shifted in phase 90° relative to the automatic phase control detector. In addition, harmonics of the reference signal and color burst signal must be controlled. Further, in many circuits an adjustable phase section is added to adjust the phase of the reference signal to the automatic phase control detector and the color killer detector for tint control. This invention provides circuitry which will bypass the harmonics to ground and compensate for the impedances of such harmonic bypass circuit and the color killer detector fixed phase shifter and provides a substantially constant amplitude to the phase detectors for all positions of the adjustable phase shift circuit. In a preferred embodiment, an equivalent resistance is uniquely determined and the impedance of a harmon bypass circuit and the fixed phase shift device of the color killer detector is made substantially equal to this equivalent resistance to provide the constant amplitude signal to the detectors.

3,694,568

Patent Not Issued For This Number

3,694,569

Patent Not Issued For This Number

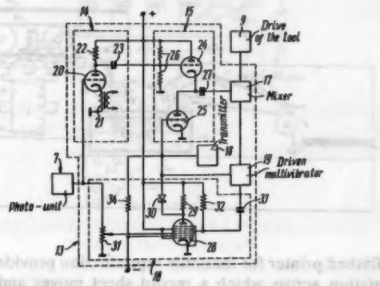
3,694,570

AUTOMATIC ENGRAVING MACHINE

Evgeny Pavlovich Kotov, ulitsa Nedelina, 34, korpus 3, kv. 7; Viktor Vladimirovich Legostov, ulitsa Nedelina, 28, kv. III; Evgeny Alexeevich Stepanov, ulitsa Nedelina, 34, korpus I, kv. III; Alexandr Mikhailovich Chuchalov, Mozhaiskor shosse, 63, kv. 7; Nikolai Kuzmich Maiorov, ulitsa Initsiativnaya, 3, korpus I, kv. 2; Gennady Pavlovich Merezhko, ulitsa Kubinka, 16, korpus 2, kv. 4; Anatoly Semenovich Komarov, ulitsa Veresaeva, 15, and Nikolai Georgievich Sosnitsky, ulitsa Grishina, 6, kv. 4, all of Moscow, U.S.S.R.

Filed July 22, 1970, Ser. No. 57,166
Int. Cl. G01d 15/02; H04n 1/06, 1/24
U.S. Cl. 178—6.6 B 3 Claims

An automatic engraving machine, in which the device, converting the photoelectric current fed from a photo-unit moved along a rotary shaft with an original into electric signals applied to the drive of a tool engraving the rotating printing shaft while moving therealong comprises two channels. The first channel includes a modulator fed with the photoelectric current corresponding to the original and an electronic switch converting the signals fed from the modulator and acting on the drive of the tool. The second channel includes an electronic relay adjusted for a predetermined level of the



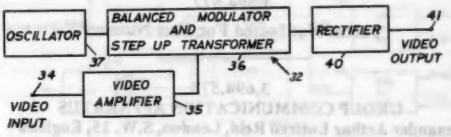
photoelectric current fed from the photo-unit and electrically connected to the electronic switch of the first channel and through a driven multivibrator with the drive of the tool so that it operates during each intersection of the original boundary by the photo-unit, switching off the first channel and simultaneously triggering the driven multivibrator generating the electric signals corresponding to the boundary of the original.

3,694,571

FACSIMILE RECORDER MARKING CIRCUIT

John W. Smith, Whitestone, N.Y., and Roger A. Pinkham, Lake Hiawatha, N.J., assignors to Graphic Transmission Systems, Inc., Hanover, N.J.

Filed Dec. 7, 1970, Ser. No. 95,775
Int. Cl. G03g 15/00; H04n 1/14, 1/16
U.S. Cl. 178—6.6 A 3 Claims



A marking circuit for a facsimile receiver in which a low voltage direct current output signal is passed through a modulator with an alternating current. The modulator output is stepped up in voltage and rectified to provide a desired high voltage for electrostatically charging a suitable recording paper for the marking thereof.

3,694,572

Patent Not Issued For This Number

3,694,573

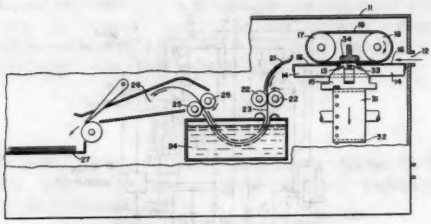
Patent Not Issued For This Number

3,694,574

ELECTROSTATIC FACSIMILE PRINTER

Thomas J. Gray, Halifax, N. S., Canada; John B. Picchiottino, and Kenneth R. Hackett, both of Boulder, Colo., assignors to Phonocopy, Inc., Wilmington, Del.

Filed Sept. 16, 1969, Ser. No. 858,297
Int. Cl. G01d *15/06*; H04n *1/14*, *1/30*
U.S. Cl. 178—6.6 A 2 Claims



A flatbed printer for facsimile reproduction provides a scan line station across which a record sheet moves and one or more scanning styli which scan the record sheet line by line as it moves across the scan line station with substantially rectilinear motion. The stylus is transported by a belt driven on two-spaced rotatable pulleys which permits a flatbed configuration with electrodes and supporting structure adapted to permit the formation of a charge image as the styli scan the record sheet and preserve the charge image during subsequent travel to a toner electrostatic developing station where a permanent visible image is produced.

3,694,575

Patent Not Issued For This Number

3,694,576

Patent Not Issued For This Number

3,694,577

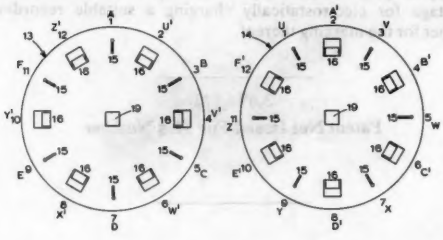
Patent Not Issued For This Number

3,694,578

GROUP COMMUNICATION APPARATUS

Alexander Arthur Luttrell Reid, London, S.W. 15, England

Filed Jan. 20, 1971, Ser. No. 107,888
Claims priority, application Great Britain, Jan. 26, 1970, 3,666/70
Int. Cl. H04m *3/56*
U.S. Cl. 179—1 CN 11 Claims



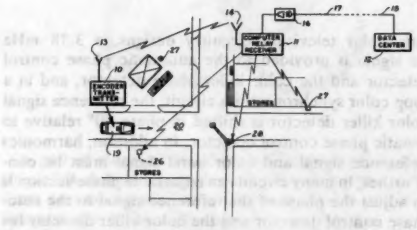
First and second conference tables are provided at separated locations. Each table carried a plurality of outward facing microphones alternating peripherally of the table with a plurality of inward facing loudspeakers. Participants sit only in front of the microphones and each participant is represented at the remote table by the correspondingly situated loudspeaker. A transmitter control means at each table senses a selected microphone in use and passes a control signal characteristic of that microphone over a communications link. A receiver control means at each table selects, upon receipt of the control signal, the appropriate loudspeaker corresponding to the selected microphone and feeds to that loudspeaker an audio signal from the selected microphone over a telecommunications link. A microphone may be selected on the basis of a push button switch or on the basis of audio signal level or both. Visual indicators at each microphone and loudspeaker indicate when they are in use.

3,694,579

EMERGENCY REPORTING DIGITAL COMMUNICATIONS SYSTEM

Peter H. McMurray, 161 Bay Ave., Islip, N.Y.

Filed Aug. 6, 1971, Ser. No. 169,737
Int. Cl. H04m *11/04*
U.S. Cl. 179—5 R 20 Claims



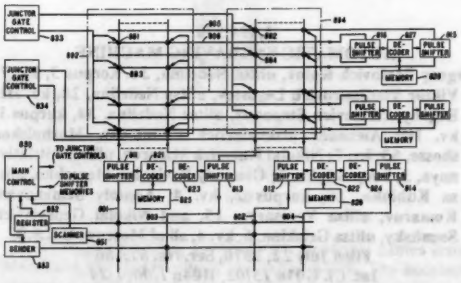
A digital communications system which can be used for emergency reporting having a transmitting unit which sends out information signals identifying the transmitting unit and identifying the type of emergency. A relay station located within the area receives and stores the signal and in response thereto electronically dials a predetermined telephone number to a data center, transmits an encoded signal identifying the station and then relays the information sent from the transmitting unit. Assistance or corrective action may then be provided by dispatch from the data center.

3,694,580

TIME DIVISION SWITCHING SYSTEM

Hiroshi Inose, and Tadao Saito, both of Tokyo, Japan, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 28, 1971, Ser. No. 166,927
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 AQ 13 Claims



A time division switching system includes first and second groups of time division buses and a crosspoint network for in-

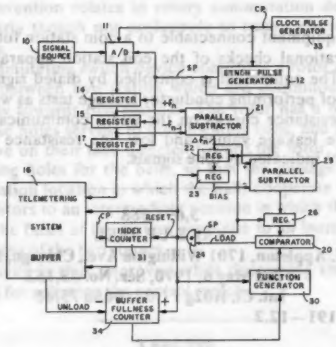
terconnecting the buses of the first group to the buses of the second group. On each time division bus, interleaved PCM codes are transmitted in a plurality of *m* time slots. Each time slot is divided into a plurality of bit intervals and each bit interval is divided into *n* positions whereby *n* interleaved PCM codes are transmitted in each time slot. A control circuit operates to selectively enable the crosspoint gates to transfer PCM code bits from the first group buses to the second group buses in each position. A control memory is provided for each path of the group having the lesser number of paths. Control codes are stored in the memory, each of which determines the operation of the gates connected to the path associated with the memory during a time slot. Each memory has a capacity corresponding to the number of paths in the group having the greater number of paths multiplied by *m n*.

3,694,581

DIGITAL SLOPE THRESHOLD DATA COMPRESSOR

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Tage O. Anderson, 628 Fairview Ave., Arcadia, Calif.

Filed May 13, 1971, Ser. No. 143,078
Int. Cl. H04b *1/66*
U.S. Cl. 179—15.55 R **4 Claims**



Apparatus is disclosed for data compression by a decreasing slope threshold test using digital techniques in which the data stream through an input register is examined and only those samples of the raw data are selected for transmission which have a first difference (slope) that exceeds an exponentially decaying threshold function relative to a bias. If a sample is transmitted, it becomes the new bias and a generator of the threshold function is reset. For threshold comparison, the bias is first subtracted from each first difference to produce a second difference for direct comparison of its absolute value with the absolute value of the threshold function, thereby allowing the function generator to run from a constant reference to generate a single sided exponentially decaying function.

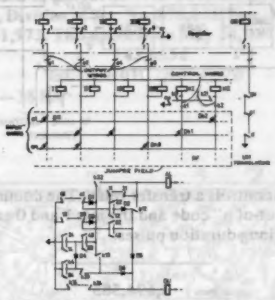
3,694,582

CIRCUIT ARRANGEMENT FOR SUPERVISING THE CODED OUTPUT INFORMATION OF A TRANSLATOR IN TELECOMMUNICATION SYSTEMS AND PARTICULARLY TELEPHONE SYSTEMS

Theodor Burian, Ditzingen, and Bernhard Krause, Ludwigsburg-Eglosheim, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed March 10, 1970, Ser. No. 18,104
Claims priority, application Germany, March 13, 1969, P 19 12 626.2
Int. Cl. H04q *3/47*
U.S. Cl. 179—18 EB **2 Claims**

A translator in a telecommunication system is equipped with output checking means. The translator is associated with control wires which are jumpered to determine the value on



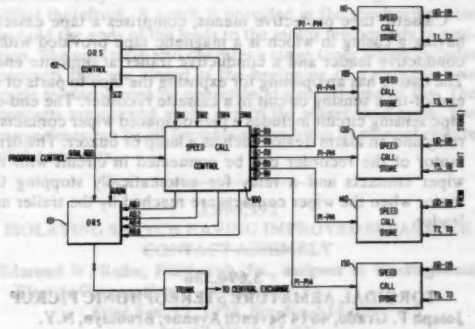
each output terminal of the translator. A comparison is made to determine when errors are present.

3,694,583

SPEED CALLING CONTROL AND STORE

Ignas Budrys, and Ernest O. Lee, Jr., both of Fairport, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Dec. 10, 1970, Ser. No. 96,928
Int. Cl. H04m *3/44*
U.S. Cl. 179—18 BA **16 Claims**



A speed calling control and store for a PBX wherein the storage facility is time shared by all parties to the system and is capable of storing either a fourteen digit number or two seven digit numbers in each storage location, the fourteen digit and seven digit storage locations being segregated so as to provide for maximum efficiency in storage.

3,694,584

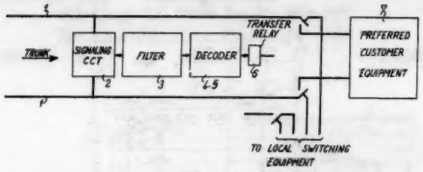
PREFERRED CUSTOMER COMMUNICATION SYSTEM

Leon M. Gimbert, 161-Rue de Javel, Paris, France

Filed May 28, 1971, Ser. No. 147,797
Claims priority, application France, May 29, 1970, 7019758
Int. Cl. H04m *3/20, 3/38*
U.S. Cl. 179—18 D **3 Claims**

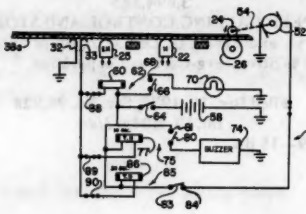
Preferred customer communication system in which trunks available to a regular switching network are selectively con-

nected to preferred customers whether or not these trunks are engaged on a regular customer call. A commandeer doubly



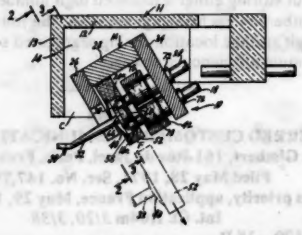
coded signal controls a transfer relay. The commandeer signal is in the "p out-of n" code and the bits 1 and 0 are represented by short and long duration pulses.

3,694,585
CASSETTE TAPE PLAYOUT SENSING, INDICATION AND PROTECTING MEANS
Sandor Goldner, 222-Keap Street, Brooklyn, N.Y.
Filed Aug. 19, 1970, Ser. No. 65,098
Int. Cl. G11b *15/06, 23/08*
U.S. Cl. 179—100.2 S **3 Claims**



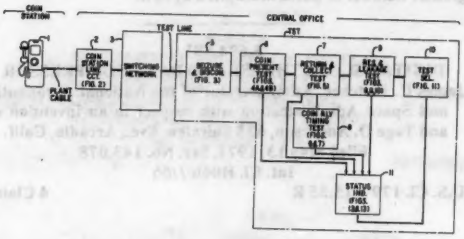
Cassette tape protective means, comprises a tape cassette having a casing in which is a magnetic tape provided with a conductive leader and a conductive trailer at opposite ends. The casing has an opening for exposing the tape to parts of an end-of-tape sensing circuit in a cassette recorder. The end-of-tape sensing circuit includes a pair of spaced wiper contacts, a relay and an alarm device such as a lamp or buzzer. The drive motor of the recorder can be connected in circuit with the wiper contacts and a relay for automatically stopping the motor when the wiper contacts are reached by the trailer and leader.

3,694,586
TOROIDAL ARMATURE STEREOPHONIC PICKUP
Joseph F. Grado, 4614 Seventh Avenue, Brooklyn, N.Y.
Filed Nov. 3, 1969, Ser. No. 873,368
Int. Cl. H04r *11/12*
U.S. Cl. 179—100.41 K **16 Claims**



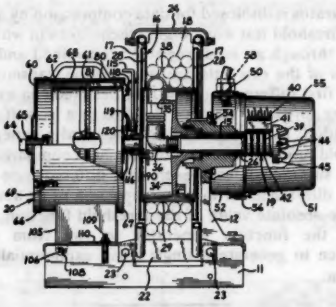
A phonograph pickup for the reproduction of stereophonic and/or monaural sound recordings which is of a balanced and magnetic electrical structure and wherein a single elastomeric damping member is employed to achieve a high degree of lateral compliance and torsional damping.

3,694,587
COIN STATION CONDUCTOR LEAKAGE TEST ARRANGEMENT
James Arthur Grandle, Jr., Marlboro, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 26, 1971, Ser. No. 146,944
Int. Cl. H04m *3/22*
U.S. Cl. 179—175.2 R **11 Claims**



Test equipment connectable to a coin station for performing operational checks of the coil station apparatus is disclosed. The equipment is controlled by dialed signals and is capable of performing conductor leakage tests as well as line-to-line resistance checks on the audio communication path. Excessive leakage values and low line resistance insulation values are indicated by tone signals.

3,694,588
TAKE-UP REEL
Arthur I. Appleton, 1701 Willington Ave., Chicago, Ill.
Filed May 6, 1970, Ser. No. 35,153
Int. Cl. H02g *11/02*; **B65h** *75/48*
U.S. Cl. 191—12.2 **10 Claims**



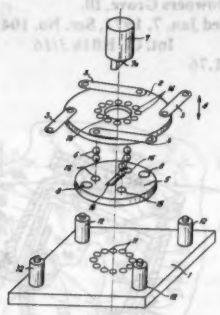
A take-up reel for storing and paying out an electrical cable in which the main components of the reel have a unitized construction to facilitate assembly and disassembly of the reel. A spring motor is hinge mounted on the reel base to permit movement of the motor away from the reel drum for quick access to the drum interior. An overrunning clutch connects the spring motor shaft to the reel drum to provide a positive drive between the motor and drum during normal winding and rewinding operations, while permitting the drum to freely overrun the shaft during rewinding in the event the drum speed exceeds that of the spring motor. The clutch also provides a reliable driving connection between the spring motor and the reel drum regardless of slight errors in their alignment.

3,694,589

ELECTRICAL COMMUTATING SWITCHES WITH BALL BRIDGING CONTACTS

Gerard Roland L. Toutain, 24, rue de Valognes, 78 Mantes La Ville, France

Filed Oct. 22, 1970, Ser. No. 83,001
Int. Cl. H01h 1/16
U.S. Cl. 200—11 A 3 Claims



The invention relates to rotary commutation devices and particularly though not exclusively to rotary electrical commutators.

A commutating switch device comprises a rotor capable of turning between two stators which are continuously biased resiliently towards one another. The rotor has a plurality of transverse holes serving to hold locating balls, and the stators each have on their face directed toward the rotor, a plurality of locating holes for the balls, so that the passage from one commutation location in which the balls cooperate with holes of the stators to an intermediate position in which the balls lie against the faces of the stators gives rise to an increased relative spacing of the two stators.

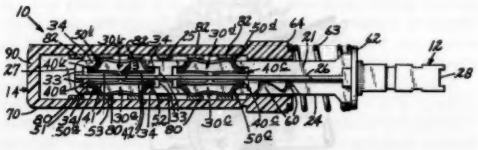
Sensitivity is thus improved while decreasing the moment required for adjusting the control switch.

3,694,590

SLIDE SWITCH WITH IMPROVED MOVABLE CONTACT ACTUATOR RESILIENT BIASING MEANS

Jon L. Otterlei, 4704 Merilane, Edina, Minn.

Filed Jan. 4, 1971, Ser. No. 103,394
Int. Cl. H01h 15/06
U.S. Cl. 200—16 C 5 Claims



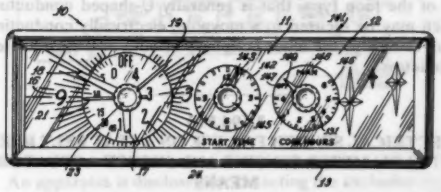
An electrical switch including an insulative casing having fixed contacts and a plunger element movable within the casing having contacts for slideably engaging the fixed contacts so as to provide a plurality of switching positions. The plunger element has a plurality of oppositely disposed recesses in the sidewalls thereof and includes a spring-like portion positioned in each recess and molded integrally with the plunger element. Each spring-like portion has two independently acting spring elements projecting divergently outward from a back wall of the recess toward front wall portions thereof so as to outwardly bias the sliding contact positioned within each recess. An embodiment is also described in which the sliding contact is either plated or vacuum deposited onto an alternative spring configuration.

3,694,591

MOTOR DRIVEN TIMER WITH CAM OPERATED BUZZER CONSTRUCTION

Ronald M. Bassett, and Joseph F. Gluth, both of Chicago, Ill., assignors to P. R. Mallory & Co., Inc.

Continuation-in-part of Ser. No. 817,500, April 18, 1969, abandoned, Division of Ser. No. 878,618, Nov. 21, 1969, Pat. No. 3,601,973. This application May 14, 1971, Ser. No. 143,653
Int. Cl. H01h 7/08, 43/10
U.S. Cl. 200—38 FA 9 Claims



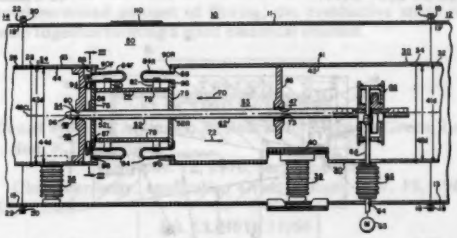
A compact motor driven timer for cooking stoves includes a dial plate carrying time markings with one or more hands rotatable relative thereto on a shaft rotatably mounted on a mechanism plate on which the dial plate is mounted. A plastic mechanism case encloses a gear train interconnecting a synchronous motor mounted on the case and the hand or hands. Shouldered portions of the case extend through the mechanism plate which has deformable ribs to hold the shouldered portions of the case and thereby the case itself in place. Screws extend through the case to secure it and the motor to the mechanism plate. The gear train includes one or more clutches to rotate an interval hand at different speeds. A buzzer arm is released to vibrate in the magnetic field of the motor at the end of the manually preset interval. Time indicating hands are also driven by the motor. The interval hand is concentrically mounted with the time indicating hands or is offset therefrom. A notch is provided in the mechanism case to hold the ends of the leads to the motor temporarily in position. The gear train also operates a range timer which includes contacts that are closed at the beginning of a variable time cycle to start a cooking operation at a preset time of day. The contacts are opened at the end of the preset time cycle. The range timer can be set for manual operation by manual closure of the contacts.

3,694,592

ISOLATING SWITCH HAVING IMPROVED SEPARABLE CONTACT ASSEMBLY

Edmund W. Kuhn, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 11, 1971, Ser. No. 114,628
Int. Cl. H01h 31/24
U.S. Cl. 200—48 R 22 Claims



An isolating switch comprising spaced, cylindrical hollow conductors capable of carrying high electrical currents

mounted within gas filled, sealed concentric cylindrical enclosures. The isolating switch when opened, has a large insulating gap for withstanding high voltages. The switch includes a bridging member which retracts inside of one of the associated hollow poles or conductors when the switch is open, and extends to bridge the gap between the two cylindrical poles when the switch is closed, thus, providing a continuous electrical path from one pole or conductor to the other. The bridging member is actuated by a suitable driving mechanism or means. The means for establishing an electrically conducting path between two conductors is independent from the means for establishing a mechanical connection between said conductors. The bridging member includes electrical contacts which are of the loop type, that is generally U-shaped conductors which may be secured to a movable, electrically conducting drum to engage the inner periphery of both of the associated conductors.

3,694,593

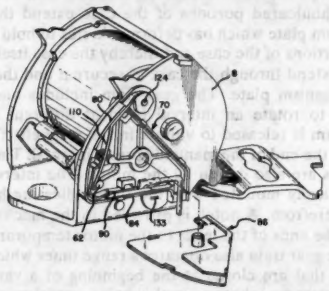
ELECTRICAL SWITCH FOR USE ON A SEAT BELT REEL WITH DIAMETER SENSING AND SWITCH ACTUATOR MEANS

Winfield Warren Loose, Linglestown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 167,061, Aug. 17, 1971, Pat. No. 3,632,059. This application Dec. 6, 1971, Ser. No. 204,862

Int. Cl. H01h *35/00, 25/14*

U.S. Cl. 200—52 R **5 Claims**



Electrical switch for use with seat belt reel comprises a low-profile triangular housing having one switch arm extending along one side of housing, around an apex, and along an adjacent side. The other switch arm extends along the adjacent side. The second switch arm is moved against the first switch arm to close the switch by a pin which extends from the reel into the housing.

3,694,594

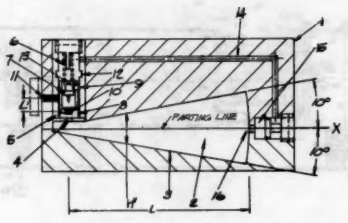
LIQUID INTEGRATING ACCELEROMETER

David S. Breed, Box 270, R.D. 2, Boonton, N.J.

Filed Dec. 23, 1970, Ser. No. 100,894

Int. Cl. H01h *35/14*

U.S. Cl. 200—61.47 **40 Claims**



An integrating accelerometer using a liquid which serves both as the sensing mass and the integrator through using the acceleration acting on the mass of the fluid to create a pressure which forces a small portion of the same fluid through a restriction giving rise to either laminar or turbulent duct flow or inertial flow through an orifice or sharp edge slit.

3,694,595

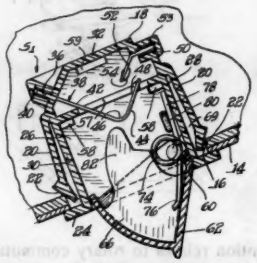
DOOR-OPERATED ELECTRIC SWITCH

Stanley V. Horecky, Oak Park, Ill., assignor to Molex Incorporated, Downers Grove, Ill.

Filed Jan. 7, 1971, Ser. No. 104,680

Int. Cl. H01h *3/16*

U.S. Cl. 200—61.76 **10 Claims**



A door-operated electric switch for refrigerators and the like comprises a housing for recessed mounting in a door jamb, the housing containing switch contacts that are actuated by a switch button that projects through the housing and is depressed upon closing of the door. The contacts are actuated as a result of a relatively small initial increment of closing movement of the door. Further closing of the door maintains the contacts in their door-closed condition. The housing has a barrier that inhibits passage of water to the switch contacts and also holes that drain water from the housing to prevent accumulation of water and possible short-circuiting of the switch contacts.

3,694,596

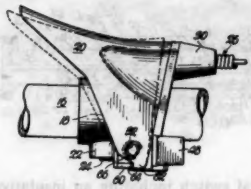
THROTTLE KILL SWITCH

John A. Carlson, Wichita, Kans., assignor to Conchemo, Incorporated, Kansas City, Mo.

Filed Oct. 1, 1971, Ser. No. 185,733

Int. Cl. H01h *9/06*

U.S. Cl. 200—61.87 **8 Claims**



A rotating control lever and electrical switch for mobile vehicles wherein the pivot member for the lever is translationally movable to act as the electrical conducting switch. The pivot member is relatively loosely confined in the lever mounting bracket, and a pair of electrical conduits are secured to the bracket in spaced relation to make selective contact with the pivot member upon its translational movement. A spring engages the pivot to urge it translationally toward one of its switch positions, while selective rotation of the lever overrides the spring bias and moves the pivot translationally to another switch position.

3,694,597

QUICK-ACTING ELECTRIC SWITCH

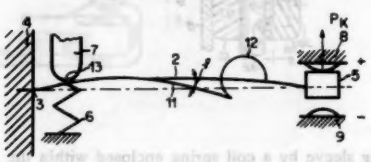
Hans Michael Rosch, Oberageri, and Ernst Limberger, Zug, both of Switzerland, assignors to Landis & Gyr, Zug, Switzerland

Filed April 27, 1971, Ser. No. 137,826

Claims priority, application Switzerland, May 5, 1970, 6703/70

Int. Cl. H01h *13/36*

U.S. Cl. 200—67 D 3 Claims



A quick-acting electric switch with a rocker which is clamped to the switch case at one end and has a contact attached to the free end thereof, which free contact moves between two fixed contacts. The rocker arm is driven by means of a ram and a compression spring in a manner so that the rocker arm accelerates before contact is broken between the free and fixed contacts.

3,694,598

SEESAW SWITCH

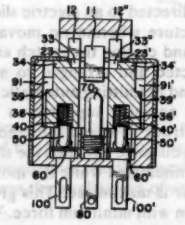
Kikuyoshi Nishikawa; Tadahisa Nakamura, and Kenji Nakakura, all of Kawasaki, Japan, assignors to Fujisoku Electric Co., Ltd., Kanagawa-ken, Japan

Filed Aug. 4, 1971, Ser. No. 168,844

Claims priority, application Japan, Aug. 13, 1970, 45/80126

Int. Cl. H01h *13/28*

U.S. Cl. 200—67 G 7 Claims



A seesaw switch comprises a rocking mechanism which includes concavely curved shoulders provided on both inner sides of the box of the switch, and a pushing rod carrier having convexly curved sliders at both sides of its lower part and fulcrum projections at both sides of its upper part. The pushing rod carrier is incorporated into the switch box so that the convexly curved slides seat on the concavely curved shoulders of the switch box and the fulcrum projections abut against the receiving stoppers of the frame of the switch. The vertically extending pieces of a button latch onto the upper part of the pushing rod carrier.

3,694,599

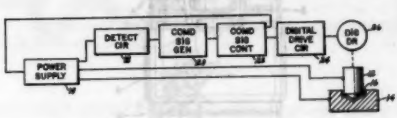
APPARATUS FOR DIGITALLY CONTROLLING THE MAGNITUDE OF A MACHINING GAP IN AN EDM PROCESS

Malcolm F. Davis, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Nov. 8, 1971, Ser. No. 196,272

Int. Cl. B23p *1/08, 1/14*

U.S. Cl. 219—69 G 4 Claims



An apparatus is disclosed for detecting the exclusive occurrence of a voltage pulse or a current pulse during an EDM machining process. A machining gap is decreased a predetermined increment in response to a predetermined number of consecutive occurrences of only voltage pulses. Further, the machining gap is increased a number of predetermined increments in response to a predetermined number of consecutive occurrences of only current pulses; and finally, the machining process is terminated in response to the gap increasing in magnitude.

3,694,600

CUSHION SWITCH MEANS

Robert H. Koenig, Cambria Heights, N.Y., assignor to Tapeswitch Corporation of America, Farmingdale, N.Y.

Filed April 5, 1971, Ser. No. 131,083

Int. Cl. H01h *13/16*

U.S. Cl. 200—86 R 6 Claims

A ribbon switch is provided for operating on soft surfaces such as cushioned seats; for instance, automobile seats. First and second flexible conductive strips are normally separated by a plurality of insulating members sandwiched between them. The insulating members are spaced so as to hold the conductive strips separated unless the conductive strips are flexed or bowed; as for instance, into a soft cushion by someone sitting on them. The spacing of the insulatng members and the flexibility of the strips is chosen so that after a predetermined amount of flexing, the conductive strips will snap together forming a good electrical contact.

3,694,601

ELECTRIC SWITCHES

Denzil Malcolm Atkinson, 30 Bournehill, Palmers Green, London, N.13, England

Filed Nov. 12, 1970, Ser. No. 88,901

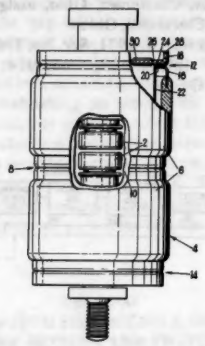
Claims priority, application Great Britain, Nov. 12, 1969, 55,421/69

Int. Cl. H01h *33/66*

U.S. Cl. 200—144 B 6 Claims

To facilitate batch production of vacuum-type circuit-interrupting devices, the envelope of such a device has an insert formed with one or more holes for gas extraction during

vacuum bake-out and for sealing on completion of bake-out by means of a solder, and possibly also a blanking member,



previously placed in the insert. A gold-indium alloy solder is suitable where the bake-out temperature is limited to about 500°C.

3,694,602

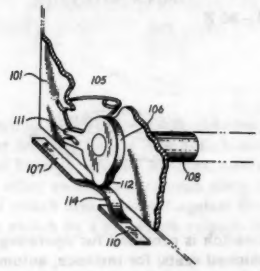
ROTARY SWITCH HAVING A TORSION SPRING SNAP MECHANISM

Sadayoshi Iwasaki, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 869,717, Oct. 27, 1969, Pat. No. 3,624,582. This application Nov. 19, 1970, Ser. No. 91,150

Int. Cl. H01h *5/10*

U.S. Cl. 200—153 L **6 Claims**



A pushbutton controlled rotary switch in which springs move into corners of an appropriately shaped opening in order to hold the switch in its various operative positions.

3,694,603

PUSH-PUSH SWITCH WITH IMPROVED ALTERNATE MAKE AND BREAK LATCHING MECHANISM

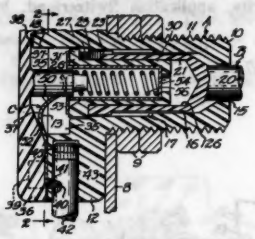
Peter Congelliere, 30636 Palos Verdes Drive, East, Inglewood, Calif., and Horace Buttner, 1501 Palos Verdes Drive, North, Harbor City, Calif.

Filed Sept. 29, 1971, Ser. No. 184,884

Int. Cl. H01h *3/52*

U.S. Cl. 200—153 J **10 Claims**

A small switch suitable for remote control of a light or other low current electrical device, embodies a bridging contact thimble telescoped over and axially slidable on a guide stud disposed between spaced resilient contact blades which are engaged by the thimble upon projection of the thimble by a floating sleeve which has radial latch dogs alternately rotated by push operation into latching engagement with the ends of circumferentially spaced holding ribs in a surrounding housing, for latching the thimble in contact with the blades, and, on the next push operation, into position to be received between the ribs for spring-loaded retraction of the thimble and the



floating sleeve by a coil spring enclosed within the thimble under compression between the guide stud and the remote end of the thimble.

3,694,604

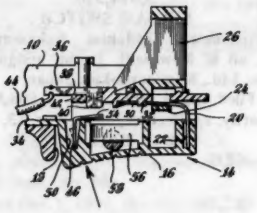
SWITCH FOR ELECTRIC KNIFE WITH WIPING ACTION CONTACT SHORTING BAR

Arthur H. Freeman, and Giacinto Vallone, both of Brockport, N.Y., assignors to General Electric Company

Filed April 9, 1971, Ser. No. 132,702

Int. Cl. H01h *23/12, 9/06, 1/18*

U.S. Cl. 200—157 **3 Claims**



The invention is directed to an electric slicing knife with improved switch structure wherein no movable leads are employed in opening and closing the switch and the parts of the switch are constructed and arranged to avoid the need for precise alignment and permitting automatic assembly.

A pivotal switch actuator supports an L-shaped shorting contact with slots struck in it and directed toward the pivot. Thereby the closing distance between the shorting bar and stationary contacts is minimized while the moment arm required to close the actuator is maximized. This gives maximum contact scrubbing action with minimum force.

3,694,605

MUTUALLY INSULATED BRIDGING CONTACTS FOR HEAVY CURRENTS

Gian Luigi Quario, Torino, Italy, assignor to Ghisalba S.p.A., Torino, Italy

Filed Dec. 10, 1970, Ser. No. 96,737

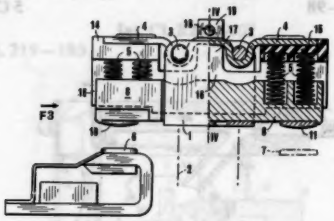
Claims priority, application Italy, Jan. 9, 1970, 67058 A/70

Int. Cl. H01h *1/34*

U.S. Cl. 200—166 D **4 Claims**

A multiple bridging contact for each conduction path of a contactor has a common support member and two adjacent bridging contact elements mounted therein. Each bridging

contact element has at each end a contact plate for cooperation with stationary contact plates of the contactor. An insulating wall is disposed within the support member between the adjacent bridging contact elements for preventing conduction from one bridging contact element to the other.



3,694,606

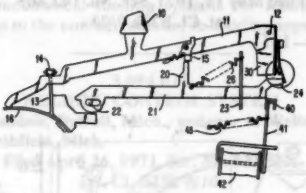
ELASTIC DIAPHRAGM SWITCH ACTUATOR

Richard H. Harris, and Louis H. Sedaris, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1971, Ser. No. 157,909

Int. Cl. H01h 9/04, 3/04

U.S. Cl. 200—168 G **5 Claims**



An elastic diaphragm switch actuator molded from a soft rubber-like material to apply the actuating force to the elastic diaphragm. The actuator has shoulder portions which engage a stop plate to prevent the application of excessive force to the diaphragm member.

3,694,607

PLASTIC SPRING TOGGLE ACTION

Anthony J. Fontana, Warwick, R.I., assignor to General Electric Company

Filed Oct. 22, 1971, Ser. No. 191,730

Int. Cl. H01h 3/04

U.S. Cl. 200—172 R **2 Claims**

A toggle mechanism for a switch is provided adapted for switches operating at relatively low amperages of one ampere or less. The toggle has a lever supported in pivoting relation in a support frame at its mid-section and oppositely extending arm and trigger handle. A plastic strip extends from the mid-section to the support frame and provides the over center action of the toggle mechanism.

ERRATUM

For Class 219—69 G see:
Patent No. 3,694,599

3,694,608

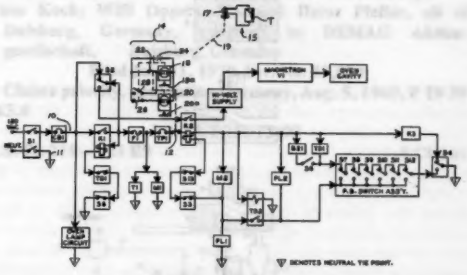
METHOD OF CONSISTENTLY REDUCING MOISTURE LOSS IN HEATING FROZEN FOODS WITH MICROWAVE ENERGY AND APPARATUS THEREFOR

Donald W. Loubert, Minneapolis, Minn., and James A. Meyer, St. Louis Park, Minn., assignors to Pillsbury Company, Minneapolis, Minn.

Filed Feb. 8, 1971, Ser. No. 113,476

Int. Cl. H05b 9/06

U.S. Cl. 219—10.55 **7 Claims**



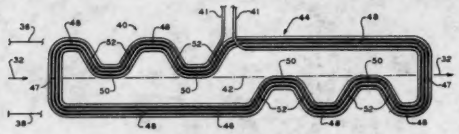
Food products are thawed by a series of intermittent microwave energy pulses. The duration of each pulse is maintained within a period of time during which Phase I heating takes place and before Phase II heating occurs. In the first phase of heating moisture is evolved at a relatively low rate, in a second phase of heating, moisture is evolved at a relatively rapid rate. The duration of the pulses is regulated so that heating in Phase II is avoided. The invention also concerns a microwave oven including a pulsing timer for providing a series of short pulses of microwave energy of adjustable duration from a fraction of a second to about a minute so that the food can be heated by means of intermittent pulses of energy without being removed from the oven.

3,694,609

METHOD AND APPARATUS FOR INDUCTIVE HEATING

Leo J. Kennedy, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed Feb. 1, 1971, Ser. No. 111,479
Int. Cl. H05b 9/02
U.S. Cl. 219—10.79 19 Claims



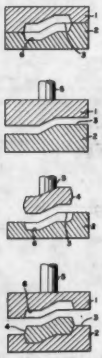
Method and apparatus for exercising effective electromagnetic influence across an entire planar surface of an electrically conductive object to inductively heat the planar surface when the dimensions of the planar surface exceed the effective limits of a field provided by opposite runs of an inductive heating coil. The method and apparatus is particularly applicable to sealing wide-mouth containers by bonding across and to the container finish a closure member. An assembly of the closure member, thermoplastic bonding material and the container finish is conveyed in a linear direction past the novel inductive heating coil. The heating coil acts to shift the effective magnetic influence of the coil across the path without physically moving the coil. Novel structures of inductive heating coils are also disclosed.

3,694,610

PROCESS FOR PREPARING A METAL MOLD BY ELECTRICAL MACHINING

Nagao Saito, Nagoya, and Kazushige Koike, Kasugai, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 6, 1971, Ser. No. 205,135
Claims priority, application Japan, March 29, 1971, 46/18532; Dec. 12, 1970, 45/110751
Int. Cl. B23p 1/08, 1/04
U.S. Cl. 219—69 M 8 Claims



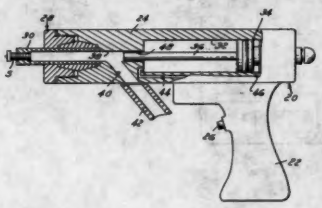
A metal mold is prepared by an electrical machining process wherein one of a base metal mold and an upper metal mold is electrically shaped by using an electrode having a desired shape on a surface thereof facing the workpiece, and the electrode then is fitted into the shaped metal mold to make a composite electrode of the two, and if necessary, the opposite surface of the electrode is also shaped. The other metal mold is then electrically shaped by using the composite electrode having the desired shape. With this invention, it is possible to provide a metal mold for thin articles, such as plastic articles.

3,694,611

APPARATUS FOR PNEUMATICALLY FEEDING STUDS TO A WELDING GUN

Donald H. Ettinger, Royal Oak, Mich., assignor to USM Corporation, Warren Division, Mt. Clemens, Mich.

Filed Dec. 1, 1971, Ser. No. 203,679
Int. Cl. B23k 9/00
U.S. Cl. 219—98 5 Claims



A stud welding gun to which studs are sequentially fed by fluid pressure in an axial direction, the gun including a plunger operable to transfer the stud to a welding position and retain it during welding, and a fluid pressure stream coaxial with the plunger for urging the stud toward the welding position, thereby preventing stud jams within the gun.

3,694,612

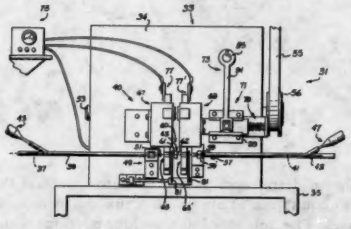
Patent Not Issued For This Number

3,694,613

BUTT WELDING AND WORKPIECE ALIGNING APPARATUS

Paul E. Ballard, North Warren, and Thomas E. Gannoe, Warren, both of Pa., assignors to GTE Sylvania Incorporated

Filed May 14, 1971, Ser. No. 143,405
Int. Cl. B23k 9/02
U.S. Cl. 219—101 13 Claims



An apparatus for producing a butt weld between two pieces of longitudinally aligned material through the agency of supplying a first piece of material to one side of a stop member, whereupon it is rigidly retained by a stationary first clamping means. A second piece of material is fed to another side of the stop member, where it is rigidly retained by a movable second clamping means. The stop member is then withdrawn and a slide member, propelled by a cam actuated linkage assembly and affixed to the second clamping means, moves this means with the second piece intact toward the first piece of material, until the two pieces contact. Current is then supplied to the two pieces to effect a butt weld whereafter both clamping means release their grip on the respective pieces, allowing an extractor to move forward and eject the welded article.

3,694,614

APPARATUS FOR PROVIDING CONTACT HEADS ON CONTACT MEMBERS

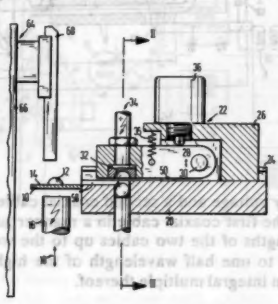
Otto Bihler, Halblech-Fussen, Germany, assignor to Otto Bihler KG, Halblech-Fussen, Germany

Filed Jan. 28, 1971, Ser. No. 110,441

Claims priority, application Germany, Feb. 4, 1970, P 20 05 094.6

Int. Cl. B23k 9/02

U.S. Cl. 219—103 8 Claims



In a welding apparatus for welding contact beads on a strip of spring metal, the bead material is fed in the form of pellets to a receptacle on one of the welding electrodes. The electrode is mounted on a carrier by means of a pivoted arm. In a position of the carrier remote from the welding area, a single pellet is transferred from a conduit to the receptacle. The carrier then moves to the welding area, the pivoted arm is swung to bring the receptacle into engagement with a strip which is also engaged by another electrode, and the pellet in the receptacle is welded to the strip.

Contact members for electric circuits are frequently to be provided with contact heads of highly conductive material; this is true, e.g., for spring metal contact members which have a rather poor electric conductivity themselves. This invention relates to mechanical feeding systems for feeding contact metal pellets to the contact member in welding apparatuses.

3,694,615

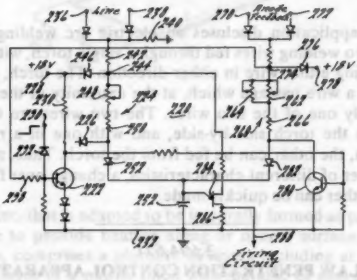
WELDING CONTROL SYSTEM

Richard Brandeis, Detroit, Mich., assignor to Weltronic Company, Southfield, Mich.

Filed April 26, 1971, Ser. No. 137,564

Int. Cl. B23k 9/10

U.S. Cl. 219—114 23 Claims



A firing control system for controlling the application of electrical energy to a welding load including sensing the power factor of the load and generating a firing curve having a fixed slope portion and a variable slope portion, the variation in slope of the variable slope portion determining the percent heat being fed to the load, the system also includes means for disabling the power factor sensing system during the first half wave.

3,694,616

METHOD OF SECURING A BEARING RACE BY WELDING USING HEAT

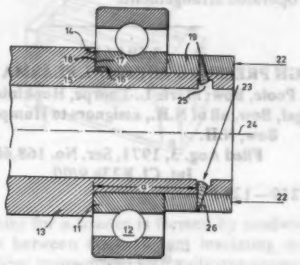
Edward Reginald Brealey, Derby, England, assignor to Rolls-Royce Limited, Derby, England

Filed Nov. 3, 1970, Ser. No. 86,581

Claims priority, application Great Britain, Nov. 26, 1969, 57,807/69

Int. Cl. B23k 15/00

U.S. Cl. 219—121 EB 4 Claims



The invention concerns a method of securing a bearing track which is journalled on a hollow shaft against rotational movement relative to the shaft. The bearing inner track is journalled against a step on the shaft and abutted by a retaining collar mounted on the shaft. An electron beam is applied to the bore of the shaft in a radial direction to penetrate firstly the shaft wall and then the retaining collar to weld them together so that a residual axial compressive load is produced sufficient to hold the bearing track against rotation relative to the shaft.

3,694,617

APPARATUS FOR FUSION WELDING OF TUBES

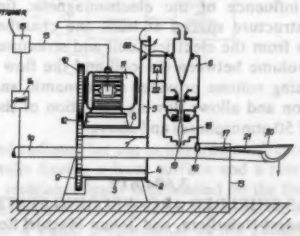
Hans Koch; Willi Oppermann, and Heinz Pfeffer, all of Duisburg, Germany, assignors to DEMAG Aktiengesellschaft, Duisburg, Germany

Filed July 31, 1970, Ser. No. 59,870

Claims priority, application Germany, Aug. 5, 1969, P 19 39 763.8

Int. Cl. B23k 15/00

U.S. Cl. 219—121 EB 9 Claims



This invention relates in general to a method and apparatus for welding tubes from a metal sheet which is formed into a tubular configuration with a longitudinally extending slot or welding gap, and which includes sensor means adjacent the slot for accurately positioning a welding device. The welding device comprises an electron beam welder having means as-

sociated therewith for shifting the beam or the holder for the beam welder in accordance with the position of the longitudinal slot of the formed tube prior to welding. The position of the beam may be regulated by deflecting it electrostatically or electromagnetically and the feeler or sensor which is associated with the formed slot of the tube is connected either electrically or mechanically for effecting the shifting of the beam. The sensor may comprise a three-pole magnet having windings between adjacent poles and which is oriented over the gap of the tube to be welded and which is connected so that the variations of voltage in the windings caused by the shifting of the gap of the tube which is to be centered in respect to the welding apparatus will provide the necessary control pulse for the shifting of the electron beam for centering it during the welding. The same control may be effected by a mechanical shifting device, by an air deflecting device, or by a mirror operated arrangement.

3,694,618

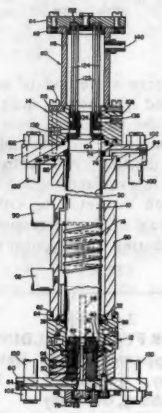
HIGH PRESSURE THERMAL PLASMA SYSTEM

John W. Poole, Bow; Merle L. Thorpe, Hopkinton, and Charles E. Vogel, Bow, all of N.H., assignors to Humphreys Corporation, Bow, N.H.

Filed Aug. 3, 1971, Ser. No. 168,686

Int. Cl. B23k 9/00

U.S. Cl. 219—121 P **8 Claims**



A high pressure induction plasma system of the flowing type includes structure defining a plasma chamber, an electrical coil surrounding the plasma chamber for creating an intense electromagnetic field within the plasma chamber, means to supply a gas for flow through the chamber under at least 10 atmospheres of pressure and conversion to plasma condition under the influence of the electromagnetic field, a flow restriction structure spaced at least one chamber diameter downstream from the electrical coil and structure defining a stabilizing volume between the coil and the flow restriction. This stabilizing volume provides aerodynamic and electrical compensation and allows flowing operation of the system at pressures of 50 atmospheres and above.

3,694,619

GAS-SHIELDED ARC-WELDING SYSTEM

Bertus Leendert Nahuijsen, and Johan Machiel Schmidt, both of Emmasingel, Eindhoven, Netherlands

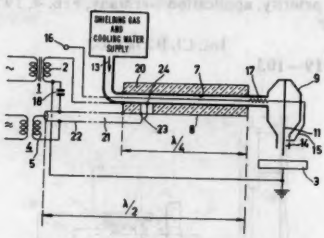
Filed Feb. 3, 1970, Ser. No. 8,288

Claims priority, application Netherlands, Feb. 3, 1969, 6901721

Int. Cl. B23k 9/00

U.S. Cl. 219—130 **10 Claims**

The invention relates to a gas-shielded arc-welding system in which the welding arc is struck and/or stabilized by a high-frequency discharge which takes place between a welding electrode and the workpiece. The matching of the high-frequency voltage source to the high-frequency discharge is improved and the welding torch is simplified by using a first coaxial cable of a length equal to a quarter wavelength of the



high-frequency voltage and a second coaxial cable connected to a point of the first coaxial cable in a manner such that the sum of the lengths of the two cables up to the welding electrode is equal to one half wavelength of the high-frequency voltage or to an integral multiple thereof.

3,694,620

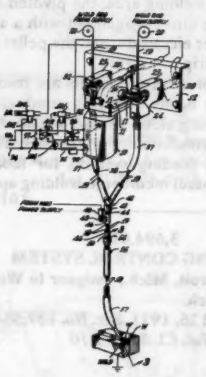
DUAL WELDING WIRE FEED FOR ARC WELDER

William R. Gleason, 204 S. Wilson Ave., Covina, Calif.

Filed Dec. 10, 1970, Ser. No. 96,959

Int. Cl. B23k 9/00

U.S. Cl. 219—130 **5 Claims**



This application discloses an electric arc welding system using two welding wires fed through a single torch, with means for driving either wire in either direction. The torch, or torch tip, has a wire passage which, at the extremity of the tip, will pass only one of the two wires. The two wires are threaded through the torch side-by-side, and with one in a retracted position, the other can be fed from the torch. Thus, assuming two wires of different characteristics, a change over from one to the other can be quickly made.

3,694,621

NULL LAW PENETRATION CONTROL APPARATUS FOR FUSION WELDING

David Wofsey, 3368 South Ulster Ct., Denver, Colo.

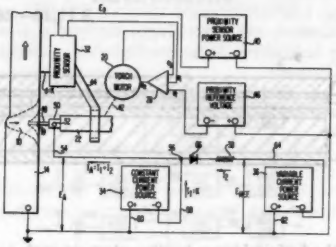
Filed Jan. 25, 1971, Ser. No. 109,338

Int. Cl. B23k 9/10

U.S. Cl. 219—131 F **11 Claims**

A non-consummable electrode welding system providing direct control of penetration while maintaining a constant

distance with respect to the surface of the weld plate and the welding torch while the welding arc current is varied as a function of the distance between the tip of the welding electrode and the surface of the weld puddle. The arc voltage is automatically compared with a reference voltage with the difference therebetween effecting a change in the arc current to cause the puddle position to immediately vary until the arc voltage is equal to the reference voltage. In the subject system the weld puddle is removed as an element in the control loop of the servo system controlling the torch position which results in a higher degree of stability and relatively faster response.



3,694,622

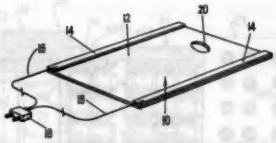
HEATER

Ralph L. Bentley, 79 Dascomb Road, Andover, Mass.

Filed Jan. 7, 1971, Ser. No. 104,637

Int. Cl. H05b 1/00

U.S. Cl. 219—213 13 Claims



A heater, that is adapted to be integrally formed as part of a structure to provide heating along or over a surface of the structure, comprises a plurality of layers including at least a resistive layer of a plastic filled with metallic or non-organic particles or powders, a thermally insulating dielectric layer adjacent one side of the resistive layer, and a thermally conductive dielectric layer adjacent another side of the resistive layer. A source of electrical energy is coupled to the resistive layer to cause heating thereof. The thermally insulating layer directs generated heat toward the thermally conductive layer to cause heating over a surface of the structure.

3,694,623

SURFACE HEATER FOR A TOASTER

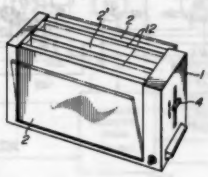
Tadao Toyooka, Toyonaka; Hiromutsu Ueda, Ibaragi; Takeo Nishida, and Atsuo Ono, both of Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 3, 1970, Ser. No. 69,398

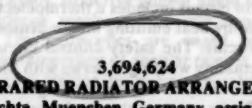
Claims priority, application Japan, Sept. 11, 1969, 44/73051; Sept. 11, 1969, 44/87553; Oct. 20, 1969, 44/00008; April 20, 1970, 45/39091

Int. Cl. H05b 1/00

U.S. Cl. 219—200 3 Claims



A surface heater for a toaster is formed by sandwiching a heating element between heat-resistant insulating materials made of a glass fiber impregnated with a silicone enamel.



3,694,624

INFRARED RADIATOR ARRANGEMENT

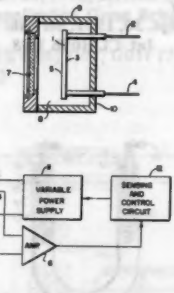
Eberhard Buchta, Muenchen, Germany, assignor to Beckman Instruments GmbH

Filed June 24, 1970, Ser. No. 49,361

Claims priority, application Germany, July 16, 1969, P 19 36 245.9

Int. Cl. H05b 1/02, 3/26; H01c 7/00

U.S. Cl. 219—358 3 Claims

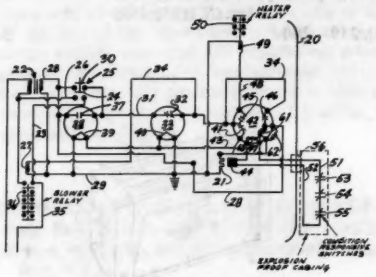


An infrared radiator for use in infrared analyzers includes a ceramic platelet having a front surface and a rear surface. A thin heating resistance layer is deposited on the front surface. A thin temperature measuring layer deposited on the rear surface provides a signal proportional to the platelet temperature. The signal is amplified and supplied to a sensing and control device which regulates the electrical power supplied to the resistance layer from a variable power supply whereby the platelet is maintained at a constant temperature. The platelet may be enclosed in a housing having a radiant energy transmitting window opposite the resistance layer. Electrical leads connected to the resistance layer and temperature measuring act to support the platelet in the housing.

3,694,625
CONTROL ARRANGEMENT FOR AN AIR HEATING APPARATUS

Saxon Cole, Webster Groves, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Feb. 2, 1971, Ser. No. 111,858
Int. Cl. H05b 1/02; H01b 47/26; F24h 3/06
U.S. Cl. 219—364 4 Claims

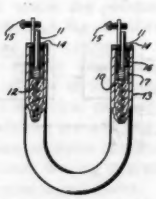


An improved control arrangement for an air heating apparatus having a multi-volt electrical power source, a power control circuit for energizing air blower means and air heating means, and a safety control circuit for de-energizing the power control circuit in response to an unsafe operating condition. The safety control circuit includes a thermoelectric generator which is activated by heat emitting means disposed within the power control circuit. The safety control circuit further includes a relay actuating winding in series with the thermoelectric generator, the relay actuating winding actuating a relay switch means. The improvement is in the relay switch means which includes a parallel combination of a normally closed switch and dropping resistor, the combination being in series with the heat emitting means so that when the relay switch means is actuated the heat emitting means is subjected to reduction in heat output.

3,694,626
ELECTRICAL RESISTANCE HEATER

John D. Harnden, Jr., Schenectady, N.Y., assignor to General Electric Company

Filed Sept. 30, 1971, Ser. No. 185,181
Int. Cl. H05b 3/08
U.S. Cl. 219—541 22 Claims

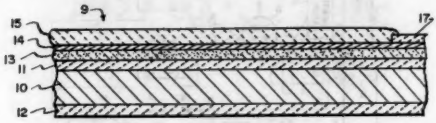


The material in the space between the lead-in sections and outer metallic sheath of an electrical resistance heater is a densely packed sintered metal oxide material for transient voltage suppression to prevent incipient breakdown and subsequent arcing between the heater wire and sheath. The sintered metal oxide material in less densely packed form may also be included alone or with conventional heat resistant, electrically insulating material along the entire length of the coiled heater wire to provide further transient voltage suppression. The sintered metal oxide material has varistor characteristics.

3,694,627
HEATING ELEMENT & METHOD OF MAKING

John K. Blatchford, St. Joseph; Edward C. Peterson, Benton Harbor, and Jan C. Burda, Eau CLaire, all of Mich., assignors to Whirlpool Corporation

Filed Dec. 23, 1970, Ser. No. 100,874
Int. Cl. H05b 3/10; B44d 1/18
U.S. Cl. 219—543 9 Claims

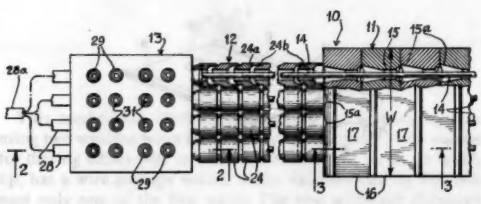


A method of making a heating element such as a heating panel for an oven or other heating device comprising applying to a heat resistant base such as a metal panel a fired vitreous ceramic first coating, then applying over this first coating a fired vitreous ceramic second coating containing dispersed metal particles and then applying over this second coating a plating of metal chemically bonded to metal particles contained in the second coating and then applying over the metal plating a fired vitreous ceramic protective coating with the result that there is provided an electrically conducting resistant heating layer that is protected by the ceramic protective coating. The disclosure also includes the heating element so produced.

3,694,628
FLEXIBLE HEATING UNIT WITH SEPARATELY REPLACEABLE HEATING ELEMENTS

Thomas A. McGwire, Pelham Manor, N.Y., and Emilio A. Racinez, Union City, N.J., assignors to Industrial Heater Co., Inc., New York, N.Y.

Filed Dec. 14, 1971, Ser. No. 207,737
Int. Cl. H05b 3/02
U.S. Cl. 219—550 10 Claims



An elongated flexible heating unit for spiral wrapping around items to be annealed or heat treated contains a plurality of heating elements in parallel circuit so that a heat treating cycle may be carried to completion even if there should be failure of an individual heating element. Novel junction boxes at opposed ends of the heating unit facilitate both easy coupling to available sources of electrical power and easy replacement of individual heating elements. Articulating spacer and protective elements longitudinally of the unit are of heat conducting ceramic material throughout the major portion of the length of the unit and of heat insulating ceramic in the lead portions adjacent the junction boxes.

3,694,629

SYSTEM OF READING OUT INFORMATION UPON RECORDING MEDIUM IN OPTICAL INFORMATION READER

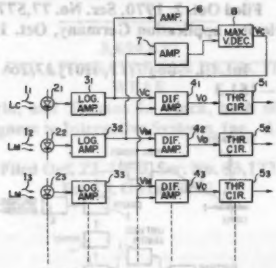
Mutsuo Ogawa, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed March 15, 1971, Ser. No. 124,280

Claims priority, application Japan, March 20, 1970, 45/23826

Int. Cl. G06k 7/10

U.S. Cl. 235—61.11 E 3 Claims



The outputs of a plurality of photoelectric effect elements arrayed so as to correspond to the marking positions in a column or row on a recording medium for detecting a marked or unmarked information are applied to a plurality of difference amplifiers through respective logarithmic amplifiers. To these difference amplifiers are applied a signal representative of the brightness upon the recording medium, this signal being selected from two or more than two outputs selected from the outputs of a plurality of logarithmic amplifiers so that the outputs from the difference amplifiers are not influenced by the brightness on the recording medium and accurately represent the marked or unmarked information of the marking positions on the recording medium.

3,694,630

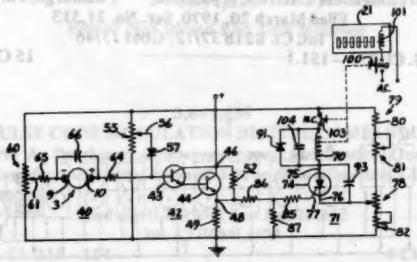
MECHANICAL EVENTS COUNTER

Frank R. Dybel, 521 Mackinaw, Calumet City, Ill.

Filed April 14, 1970, Ser. No. 28,448

Int. Cl. G07c 3/10

U.S. Cl. 235—92 PK 14 Claims



An electronic events counting device including a piezoelectric transducer responsive to the incidence of parts on a detecting plate and operative to produce an electrical signal. The electrical signal is amplified and fed to detecting means which, if the signal is of predetermined magnitude, energizes a coil for sufficient period of time to advance a count display device. After advancement of the count, the coil is automatically deenergized in readiness for a next part to be counted.

3,694,631

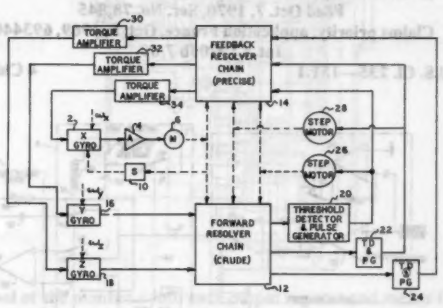
TWO-RESOLVER, STRAPPED-DOWN INERTIAL REFERENCE SYSTEM

Paul G. Cushman, 134 Mountain Drive, Pittsfield, Mass., assignor to General Electric Company

Filed Dec. 30, 1969, Ser. No. 889,161

Int. Cl. G06g 7/78; B06g 7/22

U.S. Cl. 235—150.25 7 Claims



The strapped-down reference system attains the equivalence of a three- and four-gimbal, inertial reference system by using a forward resolver chain, which can be of relatively low accuracy, to derive gimbal angle values, and high-accuracy feedback resolvers to derive signals to cage the gyroscopes. The gyroscopes are caged by pulse torque techniques and integration of angular rates is performed in an essentially digital fashion by pulse generators and stepping motors.

3,694,632

AUTOMATIC TEST EQUIPMENT UTILIZING A MATRIX OF DIGITAL DIFFERENTIAL ANALYZER INTEGRATORS TO GENERATE INTERROGATION SIGNALS

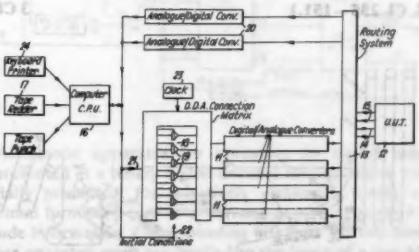
David John Bloomer, Wheathampstead, England, assignor to Haeker Siddeley Dynamics Limited, Hertfordshire, England

Filed Dec. 28, 1970, Ser. No. 101,685

Claims priority, application Great Britain, Dec. 31, 1969, 63,545/69

Int. Cl. G06j 1/02; G01r 15/12

U.S. Cl. 235—150.53 2 Claims



In computer-controlled automatic test or check-out equipment, interrogation signals for application to a unit under test are generated by a matrix of digital differential analyzer integrators, the digital outputs of the matrix be applied to digital-to-analogue converters so as to produce analogue signals to be fed to the unit under test. The computer provides initial control signals to determine the connections within the matrix and to set in initial values in the registers of the integra-

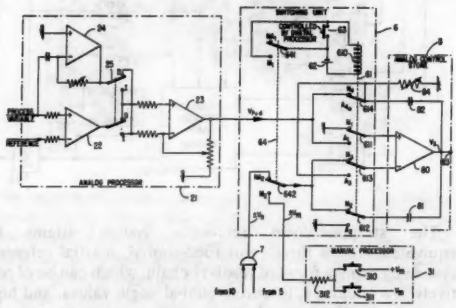
tors, after which the matrix is driven by its own clock pulse generator, leaving the computer free for processing the response signals from the unit under test.

3,694,633

ARRANGEMENT FOR BUMPLESS TRANSFER OF A CONTROL SYSTEM FROM ONE MODE TO ANOTHER

Jean C. Lejon, Paris, France, assignor to Controle Bailey (Societe Anonyme), Clamart, France

Filed Oct. 7, 1970, Ser. No. 78,845
Claims priority, application France, Oct. 8, 1969, 6934402
Int. Cl. G05b 7/00
U.S. Cl. 235—151.1 4 Claims



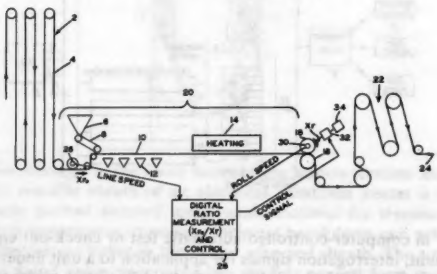
A bumpless transfer process control having three states of operation, namely a digital control state, an analog control state and a manual control state. The control includes an operational amplifier which produces an analog control signal of the process and includes a first and a second feedback capacitor. A switch operates so that the first capacitor is used as storage for the first and third states of operation and the second capacitor is used as an integrator in the second state. In each state of operation the unused capacitor constantly receives a voltage which charges it to a vlaue which enables it to be used abruptly at any time without producing a surge in the amplifier output signal.

3,694,634

PATTERN REPEAT LENGTH CONTROL SYSTEM

Robert L. Horst, and Richard M. Ringer, both of Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Aug. 16, 1971, Ser. No. 171,849
Int. Cl. B65h 23/20
U.S. Cl. 235—151.1 3 Claims



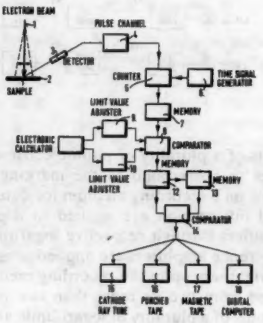
Digital inputs are fed to a programmed digital computer for a precise measurement and calculation of key line-speed parameters. The ratio of the web infeed speed measured at a point upstream of all processing actions relative to the embossing roll speed is the controlled variable. Digital speed recorders measure the web infeed speed and the embossing roll speed. The relationship between these two is automatically manipulated by the digital computer which reflect the process dynamics and describe the desired system response.

3,694,635

APPARATUS FOR DETERMINING AND RECORDING COMPONENTS AND DISTRIBUTIONS OF DIGITALLY OBTAINED MEASURED VALUES

Hubert Hoetzel, and Kurt Togel, Karlsruhe, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 2, 1970, Ser. No. 77,577
Claims priority, application Germany, Oct. 17, 1969, P 19 52 283.9
Int. Cl. G06g 7/12; H01j 37/26
U.S. Cl. 235—151.3 6 Claims



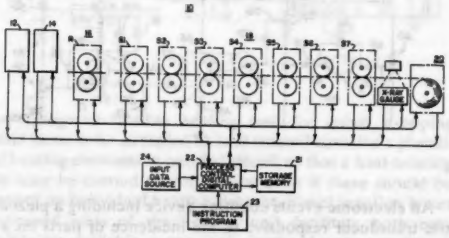
In the microanalysis of a sample face, the signals generated by X-rays reflected by said sample during scanning thereof by an electron beam, are applied to a counter, the output signals of which are applied to a comparator which is set to a desired limit range. Output signals pertaining to subsequent intervals and obtained from said comparator are applied to an additional comparator the output of which, in turn, is connected to a recording device or the like.

3,694,636

DIGITAL COMPUTER PROCESS CONTROL WITH OPERATIONAL LEARNING PROCEDURE

Andrew W. Smith, Jr., Mt. Lebanon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 20, 1970, Ser. No. 21,313
Int. Cl. B21b 37/12; G06f 15/46
U.S. Cl. 235—151.1 15 Claims



A programmed digital computer process control is disclosed including an operational learning procedure in relation to the operation of a dynamic process such as at least one rolling mill stand and classification by operational categories, such as by

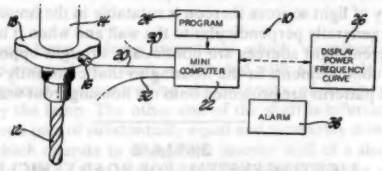
workpiece grade categories and workpiece thickness categories, with particular usefulness for a reversing mill having a variable number of workpiece passes. A least squares regression fitting of collected data is performed on line relative to process information data collected for establishing the constants in a predetermined process operational mathematical expression, which constants are modified and stored in relation to the above predetermined categories of past process operation for the prediction of future process operation. As a result of the here provided learning procedure the past operational standard error deviation is determined and can be used to test new data to determine that it does not exceed the normal and permissive scatter for some particular grade and workpiece thickness classification.

3,694,637

METHOD AND APPARATUS FOR DETECTING TOOL WEAR

Allan I. Edwin, and Thomas L. Vlach, both of Ann Arbor, Mich., assignors to Interactive Systems, Inc., Ann Arbor, Mich.

Filed Oct. 22, 1970, Ser. No. 83,173
Int. Cl. G01n *19/02*
U.S. Cl. 235—151.3 **4 Claims**



A method and apparatus for monitoring tool wear as a function of change in a power-frequency distribution obtained by Fourier analysis of a vibrational characteristic of the tool during use. Optimum tool change time is indicated by comparing a selected power spectrum or a selected portion thereof to a reference spectrum obtained from a test tool. A small general-purpose digital computer is employed in the analysis phase. A specially designed detector circuit for actual tool monitoring is also disclosed.

3,694,638

Patent Not Issued For This Number

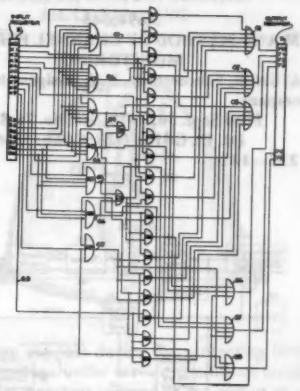
3,694,639

PULSE CODE MODULATION DIGITAL COMPANDOR

Pierre A. Deschenes, 2560 rue Troyes, Sherbrooke, Quebec, Canada, and Michel Villeret, 47 rue de la Libertian, Gisors, France

Filed April 7, 1970, Ser. No. 26,313
Int. Cl. H04f *3/00*
U.S. Cl. 235—154 **4 Claims**

A device for compressing or expanding a number *x* having plural binary digits and belonging to a predetermined range of numbers representing the amplitude of a quantized signal, into a number *y* having a lower or higher number of binary digits following a nonlinear characteristic approximated by a series of straight line segments of varying slopes which divide the range of numbers into various groups of numbers including numbers of different amplitudes. The device comprises an input register for storing said number *x;* and an output register for storing said number *y*, means for identifying the group to which the number *x* stored in the input register belongs, means for transferring predetermined binary digits relating to the



level of the number *x* into such output register and means for storing into such output register binary digits relating to the identification of such group.

3,694,640

Patent Not Issued For This Number

3,694,641

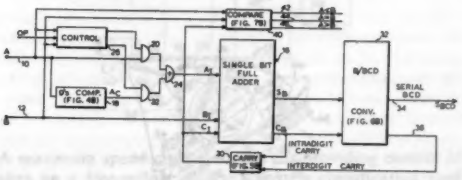
Patent Not Issued For This Number

3,694,642

ADD/SUBTRACT APPARATUS FOR BINARY CODED DECIMAL NUMBERS

Norman J. Grannis, Los Angeles, Calif., assignor to Computer Design Corporation, Santa Monica, Calif.

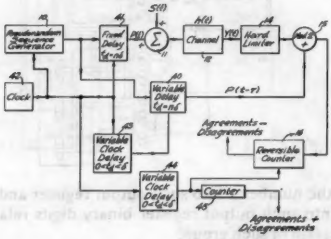
Filed May 4, 1970, Ser. No. 34,053
Int. Cl. G06f *7/50, 7/02*
U.S. Cl. 235—170 **8 Claims**



Arithmetic apparatus for operating on signed numbers represented in a binary coded decimal format, whose bits are serially presented, for selectively yielding a binary coded decimal formatted sum or difference as well as relative magnitude information. Corresponding bits from the two numbers being operated upon are applied to the input of a one bit full adder stage. In the case of subtraction, the nine's complement of one of the numbers is formed prior to application to the adder stage. A carry input is also applied to the adder stage which, in the case of an intradigit carry is developed by the adder stage and, in the case of an interdigit carry is developed by a binary-to-binary coded decimal (B/BCD) converter. The B/BCD converter embodies a plurality of one bit delay stages connected in tandem which enable a logic gate network to simultaneously examine, on the fly, a plurality of bits sequen-

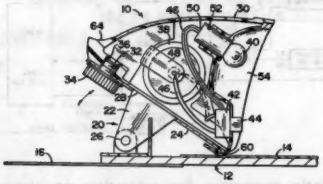
tially provided by the adder stage. A circuit for developing the nine's complement of an applied input number similarly utilizes a string of one bit delay stages.

3,694,643
SYSTEM AND METHOD OF CHANNEL PERFORMANCE MONITORING
Donald A. Smith, Schenectady, N.Y., assignor to General Electric Company
Filed Sept. 30, 1970, Ser. No. 76,829
Int. Cl. G01r *31/28*; G06f *15/34*
U.S. Cl. 235—181 **11 Claims**



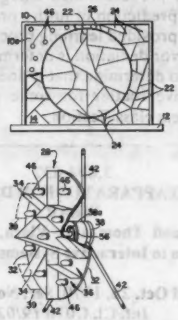
The channel impulse response of a communication channel is determined from measurement of the cross correlation between the channel output signal and a delayed locally generated pseudorandom noise sequence signal. The undelayed pseudorandom noise sequence signal is utilized as a probe signal and is added to any information signal prior to being supplied to the communication channel being monitored. The output of the channel is hard limited and polarity-coincidence compared to the time-delayed pseudorandom noise sequence signal.

3,694,644
CLIPBOARD ILLUMINATOR
Robert L. Bauknight, 2716 62nd St., Tampa, Fla.
Filed June 23, 1971, Ser. No. 155,818
Int. Cl. F21v *33/00*
U.S. Cl. 240—6.4 B **8 Claims**



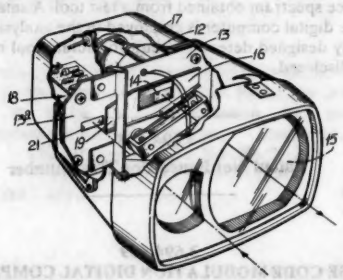
An illumination device primarily designed to be used in combination with a clipboard or the like and comprising a housing removably mounted thereon and serving to support and at least partially enclose a power source in the form of one or more dry cell batteries, a light source in the form of an incandescent bulb and a switch member all of which are electrically interconnected to activate the illumination device upon operation of the switch member. The housing is at least partially secured to the clipboard by a portion of a light reflector removably engaging the clip on the board.

3,694,645
KINETIC DISPLAY
Malcolm H. Brantz, 130 Lucerne St., Dorchester #3, Mass.
Filed Oct. 5, 1970, Ser. No. 77,804
Int. Cl. G09f *11/02*
U.S. Cl. 240—10.1 **7 Claims**



An illuminated display includes a housing with a front wall through which light can pass. The housing behind the wall is divided into a number of compartments. A wheel having an array of light sources thereon is rotatable in the housing on an axis generally perpendicular to the wall and when it is rotated, different light sources are continually brought opposite various compartments in the housing so that constantly changing light patterns are projected onto the housing front wall.

3,694,646
LIGHTING SYSTEMS FOR ROAD VEHICLES
Harris Vernon Hicks, Lichfield, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Dec. 14, 1970, Ser. No. 97,964
Claims priority, application Great Britain, Dec. 17, 1969, 61,437/69
Int. Cl. F21v *13/04*
U.S. Cl. 240—41.3 **3 Claims**



A lighting system for a road vehicle includes a projector for producing a beam of light illuminating the road in front of a vehicle equipped with the lighting system. The projector includes a light source, a focussing device for producing an image in an aperture in a mask positioned in front of the light source, and a lens positioned on the side of the mask remote from the light source the lens directing the light issuing through the aperture in the mask to constitute the beam. A shutter is movable across the aperture in the mask in response to light received from in front of the vehicle. As the shutter moves across the aperture, the projected beam is progressively cut off from one side thereof. The lens of the projector is so disposed with respect to the remainder of the system that a generally horizontally extending diameter of the lens lies at an angle of between 88° and 84° to the optical axis of the projec-

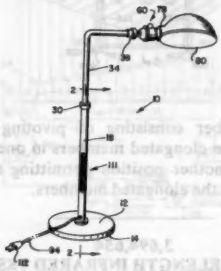
tor, the lens being tilted about a vertical axis towards the near side of the vehicle.

3,694,647

MULTIPLE POSITION, VARIABLE INTENSITY LAMP

Earle F. Chapman, Jr., Marshfield Hills, and Bernard J. Ruskin, Marblehead, both of Pa., assignors to Chapman Manufacturing Company, Avon, Mass.

Filed Jan. 25, 1971, Ser. No. 109,140
Int. Cl. F21s *1/12, 3/10*
U.S. Cl. 240—81 R 8 Claims



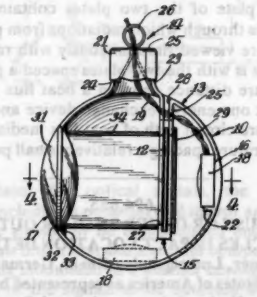
In a floor lamp, a lamp receptacle which is universally pivoted to one end of a shaft is provided with a variable impedance circuit for controlling the intensity of luminance emitted by the lamp. The other end of the shaft is bifurcated and defines a pair of substantially equal and outwardly diverging legs which operate to engage the interior wall of a sleeve mounted to a base member. The engagement of the legs and interior wall of the sleeve defines a frictional lock which allows slidable and rotational movement of the shaft within the sleeve.

3,694,648

ORNAMENTAL DEVICE

Robert L. Yates, 9346 South East End Avenue, Chicago, Ill.

Filed March 9, 1970, Ser. No. 17,494
Int. Cl. A47g *33/16*; G02b *27/00*
U.S. Cl. 240—10 T 15 Claims



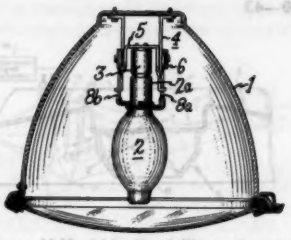
An ornamental device including a housing, means on the housing for hanging the housing on a suitable support, means within the housing for holding an element to be viewed, means within the housing for illuminating the element, and means carried by the housing for permitting viewing of the illuminated element. The device may be spherical and simulate a Christmas tree ornament. The element to be viewed may comprise a photographic transparency.

3,694,649

LAMP SUPPORT DEVICE

Richard L. Thompson, Hendersonville, N.C., assignor to General Electric Company

Filed July 22, 1970, Ser. No. 57,037
Int. Cl. F21v *19/02*
U.S. Cl. 240—153 4 Claims



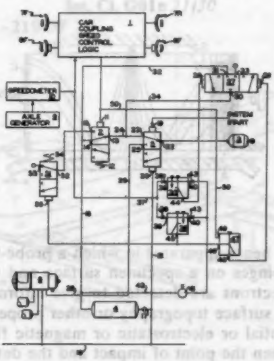
Luminaire lamp support device for protecting lamp from vibration and breakage under service conditions comprises a pair of spring wire members secured at one end to an adjustable lamp socket bracket and encircling the stem portion of the lamp at the other end. The spring wire members maintain support of the lamp in various axial positions of the socket while permitting ready removal of the lamp for replacement.

3,694,650

CAR COUPLING MAXIMUM SPEED CONTROL SYSTEM

Ronald W. Coiner, Irwin, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Nov. 27, 1970, Ser. No. 93,113
Int. Cl. B61l *3/12*
U.S. Cl. 246—182 B 7 Claims



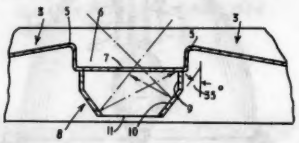
A maximum speed control circuit for providing control of brakes on a free-rolling railway car in a classification yard within a speed range having an upper limit defined by the maximum desired speed. Supply of brake pressure occurs when the maximum desired speed is exceeded and is terminated when vehicle speed is reduced below the maximum desired speed, but is not released until the vehicle speed is reduced below a value corresponding to the lower limit of the speed range to thereby limit the cycling frequency of the brakes and consequently reduce the system air consumption without sacrificing brake control. The maximum speed control circuit is combined with a car coupling speed control circuit, which operates whenever the vehicle speed exceeds a safe coupling speed concurrent with another vehicle being sensed within a predetermined distance of the free-rolling car. Release control means is provided to prevent release of braking pressure by either one of the above-mentioned control circuits when the other circuit is providing braking pressure.

3,694,651

TRAY FOR LIQUID STERILIZERS

Douglas Haigh Glasson, Marrickville, New South Wales, Australia, assignor to Aquatron Corporation (Aust.) Pty. Limited, Marrickville, New South Wales, Australia

Filed Feb. 1, 1971, Ser. No. 111,268
Claims priority, application Australia, May 19, 1970, 1245
Int. Cl. G01n 21/26
U.S. Cl. 250—43 8 Claims



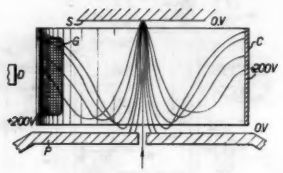
A tray for use in sterilizing liquid by U.V. rays, the tray having an outlet and a reflector mounted on the tray adjacent the outlet to reflect the sterilizing U.V. rays onto the underside of the tray around the outlet.

3,694,652

ELECTRON PROBE APPARATUS USING AN ELECTROSTATIC FIELD TO CAUSE SECONDARY ELECTRONS TO DIVERGE

John R. Banbury, 13 Gough Way, and William C. Nixon, 2 Causewayside Fen Causeway, both of Cambridge, England

Filed Jan. 30, 1970, Ser. No. 7,198
Claims priority, application Great Britain, Feb. 1, 1969, 5,855/69
Int. Cl. H01j 37/26; G01n 23/00
U.S. Cl. 250—49.5 PE 9 Claims



In electron beam apparatus in which a probe-like beam of electrons impinges on a specimen surface and the resulting secondary electrons are detected to give information about the specimen surface topography or other properties such as electric potential or electrostatic or magnetic field, there is formed between the point of impact and the detector a field which modifies the trajectories of the secondary electrons, causing them to diverge and, in some cases, to be retarded. The field can be electrostatic, set up by a cylindrical shield-like electrode and an end electrode, with the detector set in a limited angular region of the wall of the shield.

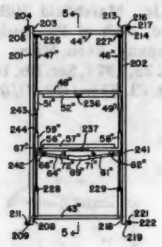
3,694,653

X-RAY FILM CASSETTE HOLDER

Charles D. Allard, San Leandro, and Eugene R. Allard, Alameda, both of Calif., assignors to Sana Products, Inc., San Leandro, Calif.

Continuation-in-part of Ser. No. 863,649, Oct. 3, 1969, Pat. No. 3,626,186. This application Nov. 4, 1971, Ser. No. 195,741
Int. Cl. G01n 21/00
U.S. Cl. 250—50 7 Claims

An X-ray film cassette holder for releasable mounting on a portable wheeled patient carrier or for mounting on a wall consisting essentially of a frame, a pair of elongated members mounted on the frame, a first slide member for engaging the top of the cassette and a second slide member for engaging the bottom of the cassette, and a locking means carried by the second slide member consisting of pivoting arms which lockingly engage the elongated members in one position and are moveable to another position permitting sliding of the slide members upon the elongated members.

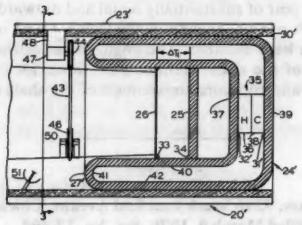


3,694,654

LONG WAVELENGTH INFRARED TEST SET

James D. Crownover, 4206 Goodfellow, Dallas, Tex.

Filed May 12, 1971, Ser. No. 142,631
Int. Cl. G01j 1/00
U.S. Cl. 250—83.3 H 24 Claims



A test set for forward looking infrared systems or cameras with test set optics projecting onto the field of view of devices being tested the infrared radiation from two plates at a controlled temperature differential subject to calibrated adjustment. A first plate of the two plates contains openings in chosen patterns through which radiations from portions of the second plate are viewed simultaneously with radiation of the first plate. This is with the two plates spaced a predetermined ΔT_1 temperature distance apart in a heat flux circuit system having at least one energy exchange device and an extended ΔT_2 temperature circuit path of heat flux media material with the ΔT_1 temperature spacing a relatively small portion thereof.

3,694,655

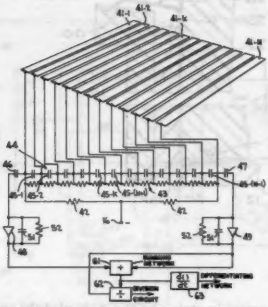
COSMIC DUST OR OTHER SIMILAR OUTER SPACE PARTICLES IMPACT LOCATION DETECTOR

Siegfried O. Auer, Ludwigshafen-Rhein, Germany, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 29, 1970, Ser. No. 102,412
Int. Cl. G01t 1/18
U.S. Cl. 250—83.6 R 13 Claims

A system for detecting the impact position of cosmic dust and other similar outer space particles on a detector surface includes means for forming an ionized stream in response to impact of a particle thereon. The ionized stream is collected

by one of a multiplicity of mutually insulated, metal electrode strips. There is provided a multiplicity of series connected capacitors, with taps between adjacent capacitors being connected to a different one of each of the strips. Each end terminal of the series circuit formed by the capacitors is connected to input terminals of amplifiers which drive circuitry to indicate the strip on which the particle impacted. To prevent the plasma stream from impinging on a strip other than the strip in closest proximity to the source of the stream, shield walls are provided along the edges of the strips.

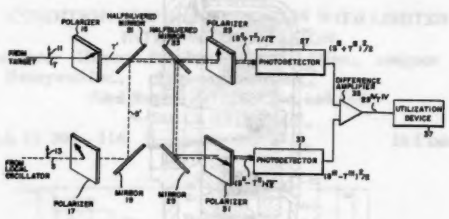


3,694,656

BALANCED OPTICAL DEMODULATOR

Harley B. Henning, Sharon, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 28, 1970, Ser. No. 84,710
Int. Cl. H04b 9/00
U.S. Cl. 250—199 1 Claim



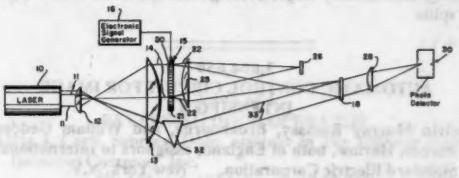
A demodulator for optical signals, the contemplated demodulator including a polarizer and mirror arrangement for combining the signals to be demodulated and optical local oscillator signals into a first and a second composite beam, the first beam being modulated in a manner corresponding to the algebraic sum of the signals to be detected and the optical local oscillator signals and the second beam being modulated in a manner corresponding to the algebraic difference between such signals. Each composite beam is directed to a different photodetector and the difference signal between the electrical output signals of the photodetectors is derived. Such difference signal, which is proportional only to the product of the signals to be demodulated and a constant related to the optical local oscillator signals, may then be processed to derive the desired demodulated signals.

3,694,657

HOLOGRAPHIC CORRELATOR WITH A FOLDED PATH ACOUSTIC CELL INPUT

Robert E. Brooks, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed March 30, 1971, Ser. No. 176,090
Int. Cl. G06g 9/00; G02f 1/32
U.S. Cl. 250—216 6 Claims



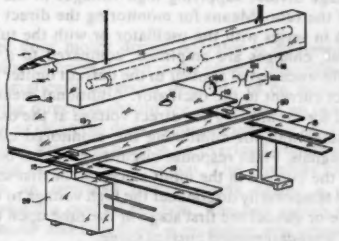
An optical signal processing system includes apparatus for identifying a complex signal by an optical matched filter. The matched filter consists of a hologram recorded by projecting coherent light through an acoustic delay line arranged to propagate an acoustic wave therein with multiple intersecting paths. This hologram is now used as the optical matched filter for identifying a signal which is impressed on the same acoustic delay line and projected on the hologram. The hologram may be so arranged as to focus the reference beam substantially in a point whenever the signal to be recorded matches the previously recorded signal.

3,694,658

VENEER INSPECTION SYSTEM

Gerald L. Watson, Tigard, and Don Latshaw, Portland, both of Oreg., assignors to Morvue, Inc., Tigard, Oreg.

Filed Oct. 22, 1970, Ser. No. 83,075
Int. Cl. G01n 21/30
U.S. Cl. 250—219 DF 3 Claims



On-line apparatus for inspecting a moving strip of veneer for the presence of cracks, knotholes, voids and similar type wood defects utilizing light transmission through the material to detect discontinuities therein. Light radiation transmitted through such a wood defect is detected by a scanner head formed of a plurality of flexible, light-conducting optical fibers whose terminal ends are positioned adjacent the surface of the veneer strip on the side opposite the light source and at spaced locations along the transverse width of the strip. The detected light radiation is conveyed by the flexible fibers to a corresponding array of photoelectric transducers which are strobe interrogated in serial sequence so as to generate as an output a composite waveform indicative of the light transmissibility pattern of the cross-section of veneer strip passing over the scanner head at the instant of the strobe. This strobe interrogation process is repeated at regular close intervals, so as to generate successive waveforms representative of the character of the wood strip passing over the scanner head. The presence of through-wood defects produces corresponding variations in

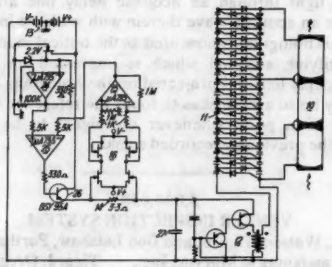
the successive waveform outputs of the photosensor array which, after digitizing, are fed into arithmetic and logic circuitry. Counter and comparator elements operate on this digital information to measure the cross-grain and with-grain dimensions of individual defects and generate an actuating signal when a defect exceeds predetermined dimensional limits. The logic circuitry distinguishes cracks and splits on the one hand, which have large with-grain and quite narrow cross-grain dimension, from knotholes and other voids in the wood having substantially larger cross-grain dimension than cracks or splits.

3,694,659

AUTOMATIC CONTROL CIRCUIT FOR IMAGE INTENSIFIER

Melvin Murray Ramsay, Broxbourne, and William Geddes Barnes, Harlow, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Sept. 15, 1971, Ser. No. 180,589
Int. Cl. H01j *31/50*
U.S. Cl. 250—213 VT **11 Claims**



An automatic brightness control circuit for an image intensifier tube includes direct current limiting means for limiting the output of an oscillator which provides alternating current to a voltage divider supplying high voltages to the cascaded stages of the tube. Means for monitoring the direct current is provided in series with the oscillator or with the tube output electrodes, changes are amplified, compared to a reference and a difference signal applied to the current limiter to control the direct current in the oscillator. Additional means may be provided for monitoring the direct voltage at the oscillator or output stage and for combining the monitored current and voltage signals. Flash response circuitry may also be added to monitor the current in the input electrode or first stage of the tube and temporarily disconnect the high voltage to the output electrode or cut-off the first stage of the tube upon the occurrence of a predetermined current surge.

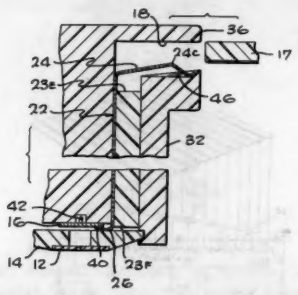
3,694,660

RADIATION SENSITIVE READOUT HEAD WITH CIRCUIT BOARD CONSTRUCTION

Harvey W. La Branche, Palos Verdes Peninsula, and John H. Northrop, La Canada, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 12, 1971, Ser. No. 105,889
Int. Cl. H011 *15/00*
U.S. Cl. 250—239 **2 Claims**

A connector which includes a circuit board wherein the conductive strips thereof are formed of a resilient conductive material and their ends extend past the edges of the supporting board. The circuit board is mounted in a housing which has a plug-receiving recess, and the projecting strips at one end of the circuit board extend into the recess, so that another circuit board can be plugged into the recess to establish contact between the strips of the two circuit boards. The housing can be part of an optical readout head, and the projecting ends of the circuit board which lie opposite those in the plug-receiving recess can support and contact photocells. The circuit board with projecting strips is constructed by adhesively fastening a conductive sheet to an insulative board of smaller length, applying an acid resist in strips to the completely exposed face of the sheet and a continuous coating to the exposed ends of the other face, and etching away the resist-free strips.

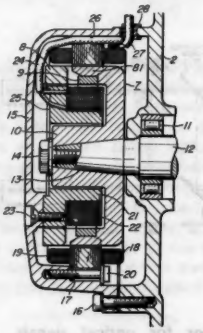


3,694,661

AC GENERATOR DIRECTLY COUPLED TO AN INTERNAL COMBUSTION ENGINE

Tsutomu Minowa, Hitachi-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 17, 1969, Ser. No. 867,299
Claims priority, application Japan, Oct. 18, 1968, 43/7599
Int. Cl. H02k *19/20*
U.S. Cl. 290—1 **1 Claim**



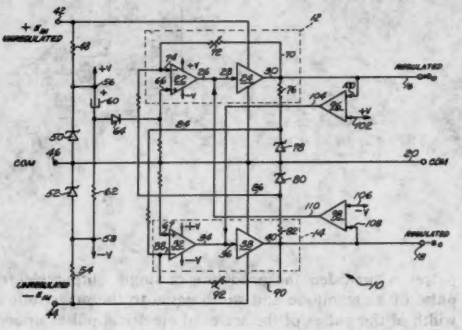
An AC generator directly coupled to an engine wherein a cup-shaped rotor having a pair of claw pole pieces is mounted on an extension of the engine crankshaft which is projected to the outside of the engine block on the side reverse to the engine output such that an opening is provided on the side opposite to the engine, an armature core with an armature coil and a field core with a field coil are respectively disposed, being separated by a small air gap, at the radially outer and inner sides of the interposed claw pole pieces, and said armature core and said field core are securely mounted on the inside of a non-magnetic cover which is fastened to the engine block to cover said armature and field cores.

3,694,662

CROSS REFERENCE POWER SUPPLY

James W. Grygera, Racine; James R. Charlton, and Kenneth S. Swenson, both of Kenosha, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed June 10, 1971, Ser. No. 151,663
Int. Cl. G05f 1/58
U.S. Cl. 307—24 14 Claims



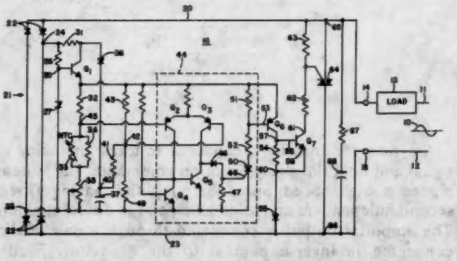
A cross reference regulated power supply including a first regulated power supply having an output terminal for establishing a positive regulated voltage thereon, a second regulated power supply having an output terminal for establishing a negative regulated voltage thereon, a first sensor connected to the output terminal of the first regulated power supply for sensing the first output voltage and directing a signal to an input of the second regulated power supply to deenergize the second regulated power supply in the event the output voltage of the first power supply varies by a predetermined amount, and a second sensor connected to the output terminal of the second regulated power supply for sensing the output voltage thereon and directing a signal to an input of the first power supply to deenergize the first power supply in the event the voltage on the second power supply output varies by a predetermined amount.

3,694,663

CONDITION RESPONSIVE CIRCUIT WITH LIMITED INTERNAL DISSIPATION

Balthasar Hubert Pinckaers, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 5, 1971, Ser. No. 169,565
Int. Cl. H01h 35/00
U.S. Cl. 307—116 10 Claims



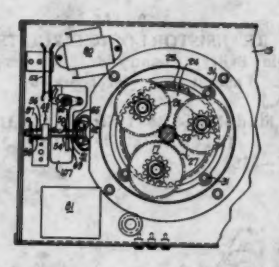
A condition responsive circuit, disclosed as including a temperature responsive element, is adapted to be connected by a pair of terminals to an alternating current load and to a source of alternating current voltage. The condition responsive circuit contains two different input impedances connected through a transistor to a differential amplifier to control a solid state switch, shown as a Triac. One of the input impedances is connected by a four-layer diode across the input of the condition responsive circuit and shorts the circuit out if the differential amplifier has not been energized to in turn operate the solid state power switching means, or Triac, prior to the voltage across the four-layer diode reaching its breakover potential. This arrangement allows for switching to a relatively high impedance within the condition responsive circuit to limit the dissipation except during the initial energizing portion of the applied waveform.

3,694,664

REVERSING DOOR OPERATOR

Alvin J. Carli, Sebring, Ohio, assignor to The Alliance Manufacturing Company, Inc.

Filed May 4, 1971, Ser. No. 140,129
Int. Cl. F16d 71/00
U.S. Cl. 307—149 12 Claims



A garage door motor driven operator is disclosed which, when the door is being driven in the closing direction, is capable of automatically reversing direction to be moved in the door opening direction should the door strike an obstruction which stops or slows the door. A torque sensitive switch actuator actuates a first switch upon an overload condition of the door moving in a closing direction. This overload of torque compresses an overload torque spring urging a reaction member toward a neutral position. The first switch de-energizes the motor and thus there is no longer any torque to oppose the torque spring which thereupon moves the reaction member in a return direction whereupon a second or reversing switch is actuated. This energizes the motor for driving the door in an opening direction. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,694,665

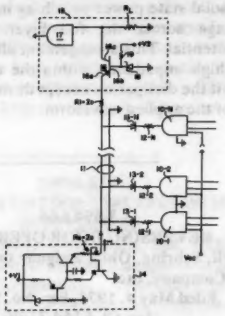
WIRED OR CIRCUIT

Robert A. Belluche, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Nov. 5, 1970, Ser. No. 87,031
Int. Cl. H03k 17/00
U.S. Cl. 307—208 6 Claims

WIRED OR circuit arrangement in which a transmission line is used as the OR'ING media. The transmission line is

driven from a source of substantially constant current having a source impedance which is substantially equal to the characteristic impedance of the line. Changes in line current are sensed by a current sensing device which also maintains a constant voltage between the line and circuit ground.

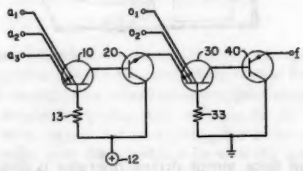


3,694,666

TRANSISTOR LOGIC CIRCUITS

Bruce Edwin Briley, Countryside, Ill., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed May 14, 1971, Ser. No. 143,314
Int. Cl. H03k *19/22, 19/30*
U.S. Cl. 307—218 **3 Claims**



A general purpose transistor logic circuit comprising an AND and an OR stage serially connected in either sequence. Each stage comprises multiemitter input transistor and a single emitter output transistor, the transistors of each stage being of the opposite conductivity type. Each stage provides an emitter follower output to achieve a substantial increase in switching speed and the combined stages effectively cancel voltage shifts occurring across each.

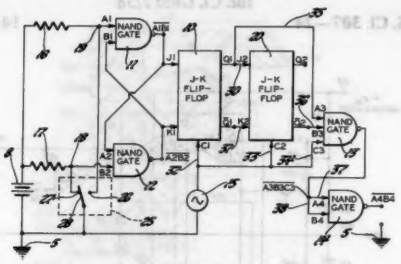
3,694,667

SINGLE PULSE TEST CIRCUIT

William C. Staker, Jr., Springfield, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 22, 1971, Ser. No. 182,595
Int. Cl. H03k *5/20*
U.S. Cl. 307—232 **4 Claims**

A single pulse test circuit for separating, upon the operation of an electrical switch, a single electrical pulse from a series of electrical pulses simultaneously applied to the clock pulse input terminal of each of two J–K flip-flop circuits. The Q and Q output terminals of the first J–K flip-flop circuit are connected to the J and K input terminals, respectively, of the second J–K flip-flop circuit. Circuitry, including the electrical switch, is provided for applying a logic "one" electrical signal to a selected one of the input terminals and a logic "zero" electrical signal to the other input terminal of the first J–K flip-flop circuit and, upon the operation of the electrical switch, for reversing the electrical signals applied to each one of the input terminals. NAND gate logic circuitry responsive to the same logic electrical signal upon each the Q output terminal of the first J–K flip-flop circuit and the Q output terminal of the second J–K flip-flop circuit and one of the series of electrical pulses is provided for producing a single output electrical pulse of a magnitude and width equal to the magnitude and width of the pulses of the series of electrical pulses upon the operation of the electrical switch.

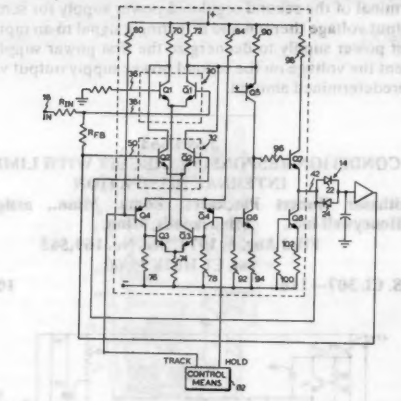


3,694,668

TRACK AND HOLD SYSTEM

Roy P. Foerster, Thousand Oaks, Calif., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Jan. 2, 1970, Ser. No. 84
Int. Cl. H03k *5/08*
U.S. Cl. 307—235 **9 Claims**



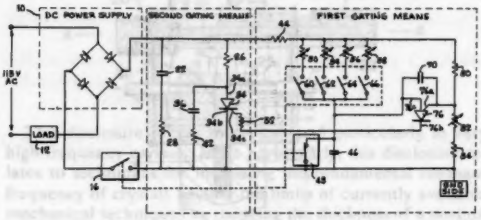
A system for enabling a capacitor to track an analog input signal and hold the signal level, on command. The system includes a high speed operation amplifier having first and second independent and selectable pairs of differential inputs. The amplifier output is connected through a pair of diodes connected in inverse parallel to the capacitor. Feedback means couple the capacitor to one pair of inputs in the track mode in a manner such that the high amplifier gain compensates for nonlinearities and offset effects to enable the capacitor to precisely track the input signal. In the hold mode, the other pair of inputs is selected to enable the amplifier to act as a unity gain voltage follower providing an output substantially equal to the capacitor voltage and insufficient to exceed the forward threshold of the diodes.

3,694,669

TIMING CIRCUIT FOR A PROGRAMMABLE TIMER

Allan E. Witt, Fairfield, and George M. Suhm, Bridgeport, both of Conn., assignors to Food Automation Service Techniques Inc., Bridgeport, Conn.

Filed April 27, 1971, Ser. No. 137,806
Int. Cl. H03k 17/00
U.S. Cl. 307—252 F 3 Claims



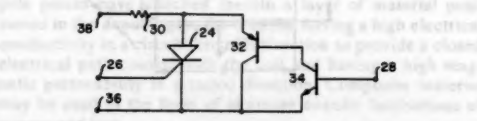
A timing circuit providing a number of adjustable time intervals by pressing one of a number of timing switches. The circuit includes a DC power supply and a first and a second gating means connected across the power supply. The first gating means includes a bank of timing switches mechanically ganged such that only one switch can be closed at any particular time. Each of the timing switches connects a charging element in a series circuit including a trimmer resistor and connected across the power supply. A programmable unijunction transistor detects the current through the charging element and is turned on when the current reaches a specified value. The programmable unijunction transistor controls a silicon controlled rectifier which shorts the DC power supply. A timing interval is chosen by pressing one of the several timing switches. The chosen timing switch connects the charging element across the DC power supply through a particular trimmer resistor. After the time interval determined by the timing constant of the series circuit including the charging element, the programmable unijunction transistor is turned on. The output signal provided by the turned on programmable unijunction transistor in turn turns on the silicon controlled rectifier to delineate the end of the timing interval started with the closing of one of the timing switches.

3,694,670

EASILY SWITCHED SILICON CONTROLLED RECTIFIER

Joseph M. Marzolf, 3304 Garland Drive, Falls Church, Va.

Filed Oct. 26, 1971, Ser. No. 192,099
U.S. Cl. 307—252 M 5 Claims



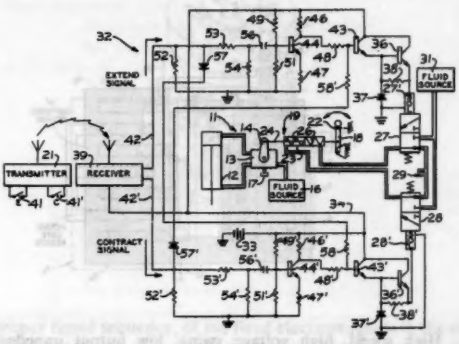
A combination of transistors, which can be integrally formed with an SCR is used to effect a turn-off. The magnitude of the turn-off pulse is less than that required to turn it on. When the entire circuit is self contained, only four leads to the device are required. Two of the leads handle the load current in the typical well known manner. The SCR turn-on is effected by a pulse applied to the gate through a third lead. A fourth lead is provided to turn the SCR off by causing an anode to cathode short across the SCR. This short is controlled by two transistors connected in an "inverted darlington" configuration.

3,694,671

DRIVER CIRCUIT FOR SPEEDING RESPONSE OF REMOTELY CONTROLLED APPARATUS

Donald F. Coleman, Dunlap, and Joe E. Fuzzell, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 2, 1970, Ser. No. 85,853
Int. Cl. G05b 5/01
U.S. Cl. 307—254 9 Claims



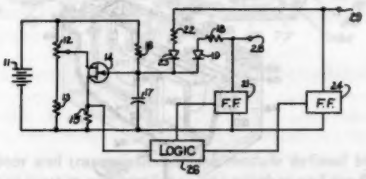
A fluid motor system controlled by electrical signals originating at a remote location has driver circuits, for energizing motor control valve solenoids in response to signals, with means for assuring fast termination of motor operation upon termination of a control signal. Upon termination of a signal causing motor operation in one direction, the circuit momentarily actuates the motor in the opposite direction. Capacitive means in the driver circuit undergoes a change of charge condition while a control signal is received and thereafter produces a momentary reverse operation signal while reverting to the original charge condition.

3,694,672

TIMING CIRCUIT WITH MULTIPLE TIME CONSTANTS AND SWITCHING MEANS TO CONNECT AND DISCONNECT SAID TIME CONSTANTS SELECTIVELY

William P. Buyak, New Hartford, Conn., assignor to North American Philips Corporation, New York, N.Y.

Filed March 23, 1971, Ser. No. 127,275
Int. Cl. H03k 4/50, 5/13
U.S. Cl. 307—293 13 Claims



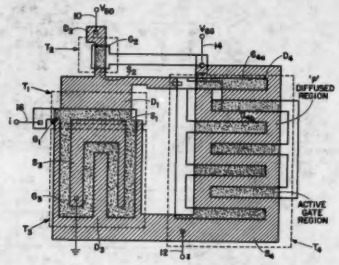
A circuit utilizing a unijunction transistor or equivalent relaxation oscillator with a flip flop connected to the output thereof and having its output connected to control the time constant of the relaxation oscillator so that on alternate oscillations the time constant will be relatively low and on the remaining oscillations it will be relatively high to generate a signal having two time intervals in succession. A logic network controls driving circuits in response to the signals produced by the oscillator and the logic circuit divides the frequency of the oscillations to values suitable for timers such as interrupter timers for telephone systems.

3,694,673

FIELD EFFECT DEVICE AND CIRCUIT HAVING HIGH CURRENT DRIVING CAPABILITIES UTILIZING SUCH DEVICE

Kenneth K. Au, Ottawa, Ontario, Canada, assignor to Microsystems International Limited, Ottawa, Ontario, Canada

Filed March 15, 1971, Ser. No. 124,278
Int. Cl. H01l *11/14, 19/00*
U.S. Cl. 307—304 3 Claims



High speed, high voltage swing, low output impedance clock circuit is described. The circuit is designed to provide high current drive and uses a novel field effect device to resistively couple supply voltage to output voltage. The invention further relates to the field effect device per se.

ERRATUM

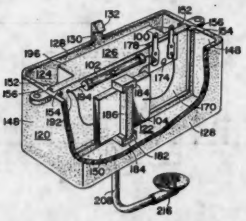
For Class 307—150 see:
Patent No. 3,694,729

3,694,674

HIGH VOLTAGE GENERATING APPARATUS

Keiji Inoue, Yokohama, Japan, assignor to Denki Onkyo Company Limited, Tokyo, Japan

Filed Sept. 25, 1970, Ser. No. 75,603
Claims priority, application Japan, Sept. 29, 1969, 44/92983; Sept. 29, 1969, 44/92984; Sept. 29, 1969, 44/92985; Sept. 29, 1969, 44/92986; Sept. 29, 1969, 44/92316; Sept. 29, 1969, 44/92317
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.2 8 Claims



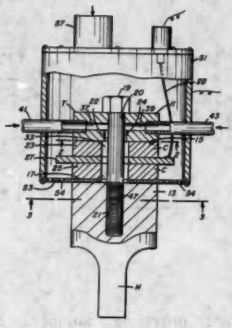
In a high voltage generating apparatus comprising a piezoelectric transformer element for generating a high AC voltage and a voltage step-up rectifier connected to the output electrode for generating a high DC voltage, there is provided a casing divided into two compartments by means of a partition wall for containing the piezoelectric transformer element and the rectifier respectively. Sealing means is provided between the periphery of the partition wall and the inner surface of the casing to electrically isolate the piezoelectric transformer element from the voltage step-up rectifier.

3,694,675

COOLED ULTRASONIC TRANSDUCER

Thomas E. Loveday, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 25, 1971, Ser. No. 118,797
Int. Cl. H04r *17/00*
U.S. Cl. 310—8.9 8 Claims



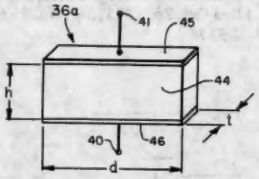
Ultrasonic apparatus comprises a centrally bolted ultrasonic transducer having passages for internal cooling by a stream of fluid such as air. Radial ducts in a metal back mass open into an enlarged portion of a first bolt hole adjacent the bolt for supplying air. Air then flows forward through an annular passage in the piezoelectric crystal means and enters an enlarged portion of a second bolt hole in a metal front mass from which it is discharged through radial ducts in the front mass. Both enlarged portions should be of oval shape to assure strength and rigidity. A housing can surround the transducer for externally cooling it with a stream of air. The transducer can be mounted on the housing by a perforate plate or flange.

3,694,676

SHEAR MODE PIEZOELECTRIC FILTER

Adrian J. De Vries, Elmhurst, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed March 17, 1971, Ser. No. 125,244
Int. Cl. H01v *7/00*
U.S. Cl. 310—9.5 1 Claim



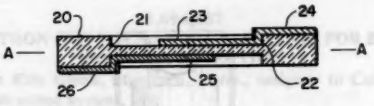
A rectangular block of piezoelectric material serves as a filter for electric signals, presenting series resonance at a selected frequency between a pair of terminals. The block has a length and height substantially greater than its thickness and is poled in the direction of the thickness. A pair of electrodes on opposing faces of the block are coupled respectively to the terminals for developing a signal field transverse to the thickness direction and, in response to which, shear waves are propagated in the block. The thickness is one-half the shear wavelength. To prevent the development of spurious wave modes, the ratio of the height to the thickness is an odd integer.

3,694,677

VHF-UHF PIEZOELECTRIC RESONATORS

Gunter K. Guttwein, West Long Branch; Arthur D. Ballato, Long Branch, and Theodore J. Lukaszek, Ocean, all of N.J., assignors to The United States of America as represented by the Secretary of the Army

Filed March 3, 1971, Ser. No. 120,390
Int. Cl. H01v 7/00
U.S. Cl. 310—9.6 4 Claims



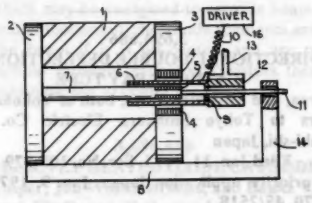
This disclosure relates to crystals and particularly to very high frequency crystals. More particularly, this disclosure relates to techniques for increasing the fundamental resonant frequency of crystals beyond the limits of currently available mechanical techniques by reducing the thickness of a portion of the center of a standard crystal. This provides an effective resonant sector of an area and thickness that would be virtually impossible to manufacture or to mount by conventional techniques or use in existing mechanical structures.

3,694,678

LINEAR MOTORS FOR HEAD ACTUATORS

Gordon George Scarrott, Welwyn Garden City, England, assignor to International Computers Limited, London, England

Filed Dec. 30, 1970, Ser. No. 102,772
Claims priority, application Great Britain, Jan. 28, 1970, 4,053/70
Int. Cl. H02k 41/02
U.S. Cl. 310—13 2 Claims



A moving coil linear motor is described having an annular non-magnetic gap defined by an annular permanent magnet and a pair of pole pieces on the magnet, one pole piece having a circular aperture therethrough, the center of which is coaxial with the annular magnet. A hollow tubular coil is movably situated in the annular gap and coaxial therewith. One or both pole pieces have attached thereto a layer of material positioned in the annular gap, the material having a high electrical conductivity in a circumferential direction to provide a closed electrical path coaxial with the coil and having a high magnetic permeability in a radial direction. Composite material may be used in the form of alternate annular laminations of copper and iron.

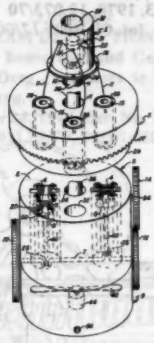
3,694,679

ELECTROMAGNETIC ENGINE

Everett W. Erdoesy, Osprey, Fla., assignor to Gretha M. Erdoesy, Osprey, Fla., a part interest

Filed May 27, 1971, Ser. No. 147,544
Int. Cl. H02k 7/06
U.S. Cl. 310—24 15 Claims

An electromagnetic engine is disclosed. The engine has a rotational voltage power distributor, an air-cooled circular head having fixed electromagnets, an air-cooled engine block with crankshaft and an engine pan having a cooler blower system. The engine block contains electromagnetic pistons. The engine utilizes magnetic attraction and repulsion, in



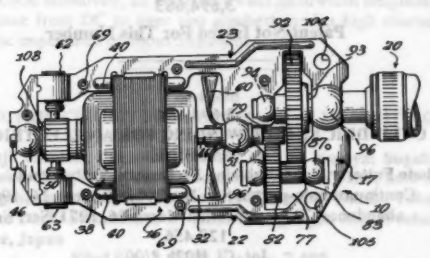
proper timed sequence, of the fixed electromagnets in the circular head and the electromagnetic pistons to drive the crankshaft.

3,694,680

STAMPED SHELL SHEET METAL FRAME MODULE FOR A POWER TOOL

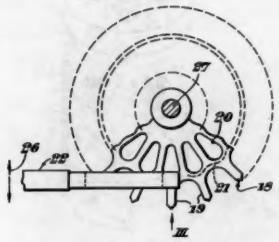
Anthony Jacyno, Aurora, Ill., assignor to G. W. Murphy Industries, Inc. Portable Electric Tools Division, Houston, Tex.

Continuation-in-part of Ser. No. 850,834, Aug. 18, 1969, abandoned. This application Oct. 6, 1970, Ser. No. 78,434
Int. Cl. H02k 5/06, 7/14
U.S. Cl. 310—50 21 Claims



A motor and transmission frame module defined by plates that are at least in part similar to one another and are fastened rigidly together in engagement over a substantial area thereof by any of a variety of securing means. Two cut out portions in the plates provide receiving means for a motor assembly and transmission gearing, respectively, with bearing receiving means being provided in the plates by aligned semispherical struck out portions that provide radial and axial support for the various bearings and permit alignment of the same upon assembly. Alternatively, struck out portions may be cylindrical to receive stub shafts of bearing blocks or the like. The plates are stiffened by ribs or flanges. The assembled plates mounting a motor and transmission are adapted to be received in a cast housing of a power unit and/or a power tool.

3,694,681
PIEZOELECTRIC MOTOR
Frederick Otto Horstmann, and Cecil Frank Clifford, both of Newbridge Works, Bath, Somerset, England
Filed Oct. 16, 1970, Ser. No. 81,207
Claims priority, application Great Britain, Oct. 21, 1969, 51,541/69; March 13, 1970, 12,073/70
Int. Cl. H04r 17/00
U.S. Cl. 310—8.3 3 Claims



An electromechanical motor has a piezoelectric reed, anchored at one end and co-operating at its free end with a rotor. The rotor or the reed is provided with a wavy track, for example a flux gap, or a magnetic element which forms a magnetic coupling with a magnetic element or elements carried by the reed or rotor respectively. Upon the application of an alternating driving voltage to the piezoelectric reed, at a frequency other than the natural frequency of the reed, the latter undergoes flexural oscillations which induce rotation of the rotor through the magnetic coupling.

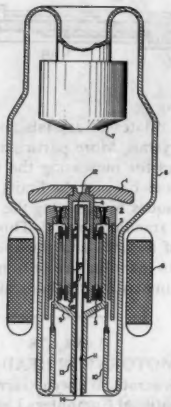
3,694,682
Patent Not Issued For This Number

3,694,683
Patent Not Issued For This Number

3,694,684
CYLINDRICAL COIL WINDING FOR AN ELECTRICAL MACHINE
Bodo Futterer, Schonbuhlring 37, Luzern, Switzerland
Continuation-in-part of Ser. No. 760,009, Sept. 16, 1968, abandoned. This application March 26, 1971, Ser. No. 128,456
Int. Cl. H02k 3/00
U.S. Cl. 310—198 5 Claims

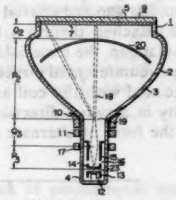
A cylindrical coil for an electrical machine having a plurality of turns wherein each turn overlaps a plurality of adjacent turns and a portion of each turn lies in a first cylindrical layer and the remaining portion of each turn lies in a second cylindrical layer. The wire turns have a rhomboidal contour.

3,694,685
SYSTEM FOR CONDUCTING HEAT FROM AN ELECTRODE ROTATING IN A VACUUM
John M. Houston, Schenectady, N.Y., assignor to General Electric Company
Filed June 28, 1971, Ser. No. 157,483
Int. Cl. H01j 35/10
U.S. Cl. 313—60 13 Claims



Heat is conducted from an electrode moving in an evacuated enclosure and subject to heating by an electron beam by interposing a film of liquid metal between stationary and moving parts of the thermal path between the moving electrode and a stationary metal surface and cooling the stationary metal surface.

3,694,686
UNIDIRECTIONAL DOUBLE DEFLECTION TYPE CATHODE RAY TUBE
Norio Harao, and Motohiro Yano, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co. Ltd., Kawasaki-shi, Japan
Filed Jan. 11, 1971, Ser. No. 105,279
Claims priority, application Japan, Jan. 9, 1970, 45/2517; Jan. 9, 1970, 45/2518
Int. Cl. H01j 29/06, 29/76
U.S. Cl. 313—75 16 Claims



A unidirectional double deflection type cathode ray tube comprises an evacuated envelope, a target at one end of the envelope, an electron gun at the other end of the envelope for emitting an electron beam, main deflection means positioned between the electron gun and the target for deflecting the electron beam in one direction, an arcuate lens electrode device curved about the deflection center of the electron

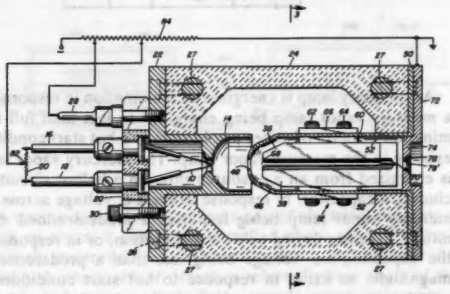
beam caused by the main deflection means, the lens aperture electrode device being provided with a plurality of lens apertures equally spaced apart in the direction of the scanning of the electron beam. Further provided is an auxiliary deflection means co-operating with and synchronized with the main deflection means for further deflecting the beam by a length equal to the pitch of the projection of the lens apertures the electron beam being thereby deflected to the positions of respective lens apertures.

3,694,687

ELECTRON GUN WITH ANODE SEGMENTS FOR BEAM POSITION DETECTION

William Ellis Glenn, Stamford, Conn., assignor to Columbia Broadcasting System, Inc.

Filed Aug. 12, 1970, Ser. No. 63,226
Int. Cl. H01j 29/74, 29/02, 29/82
U.S. Cl. 313—78 2 Claims



In an electron gun, an anode structure in which the electron beam aperture is defined by four mutually insulated anode segments which may be energized to provide beam centering. In a preferred embodiment, the anode segments are shaped to intercept the beam if it is off-center, and are returned to ground potential through respective resistors thereby being operative automatically to center the beam.

3,694,688

DIRECTLY HEATED OXIDE CATHODE

Adrianus Kuiper; Jan Willem Brouns, and Bauke Visser, all of Emmasingel, Eindhoven, Netherlands

Filed Sept. 21, 1971, Ser. No. 182,379
Claims priority, application Netherlands, Sept. 30, 1970, 7014337
Int. Cl. H01j 1/14, 1/15
U.S. Cl. 313—346 DC 8 Claims

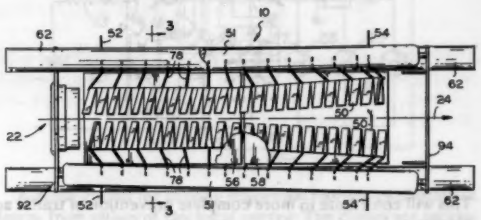
A directly heated cathode assembly comprising a tape-shaped member having a perforated central plane portion and end portions longitudinally extending from two sides of the central portion, a cathode plate member in spaced confronting relationship with one surface of the central portion, and electron emissive material embedded within the perforations of the central portion and interposed between the cathode plate member and the central portion. The width of the central portion of the tape-shaped member is greater than that of the end portions. The cathode plate member is secured to the central portion of the tape-shaped member at two oppositely located positions of the central portion spaced from the end portions.

3,694,689

ELECTRON BEAM DEFLECTION APPARATUS

Conrad J. Odenthal, Beaverton, and George K. Hashizume, Portland, both of Oreg., assignors to Tektronix, Inc., Park, Beaverton, Oreg.

Filed Feb. 24, 1971, Ser. No. 118,293
Int. Cl. H01j 29/70, 25/36; H03h 7/30
U.S. Cl. 315—3 22 Claims



A delay line type of deflection apparatus for deflecting an electron beam in a cathode ray tube is described, which includes a of helical deflector members having rectangular turns each having a pair of flat side portions separated by a deflector portion of different width. Two pairs of grounded adjustable compensator plates are positioned adjacent the flat side portions on opposite sides of both helical members to form delay lines of substantially uniform characteristic impedance. The width and spacing of adjacent deflection portions is substantially uniform while the width and spacing of adjacent side portions varies for successive turns along the path of the electron beam. This provides the deflection apparatus with good deflection sensitivity, an extremely wide bandwidth frequency response from DC to over one gigahertz and a high characteristic impedance of about 365 ohms.

3,694,690

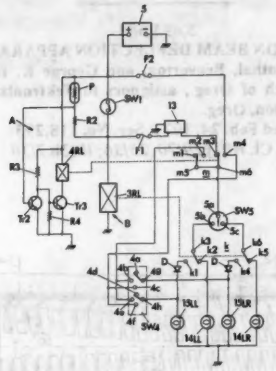
ELECTRIC CIRCUIT FOR AUTOMATICALLY IGNITING PARKING LAMPS AT DUSK

Tetsuji Shimizu; Takaomi Yoshida, both of Nagoya; Sugako Otake, Kariya; Hajime Sumida, and Shinichi Ueno, both of Nagoya, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishi-Kasugai-gun Aichi Prefecture, Japan

Filed Feb. 2, 1970, Ser. No. 7,499
Claims priority, application Japan, Feb. 20, 1969, 44/14253
Int. Cl. B60g 1/08
U.S. Cl. 315—82 10 Claims

The present invention discloses an electric circuit for automatically igniting parking lamps at dusk which comprises a light detecting circuit composed of one or more photoconductive elements, and one or more relays connected to the photoconductive element and having a plurality of contacts connected to a below mentioned parking lamp circuit; the parking lamp circuit adapted to be selectively operated through operation of the relay of said light detecting circuit thereby to ignite one or all of parking lamps; and a switching circuit composed of a relay connected between an ignition switch arranged for closing and opening a power source and the light detecting circuit and having a plurality of contacts breaking or completing a winker circuit and the light detecting circuit according to operation of said ignition switch. The electric circuit can ignite the left and right parking lamps

simultaneously and automatically as it becomes dark, hence the sign of parking is more effectively known by other car.



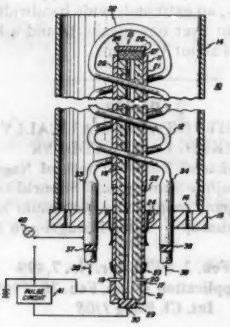
This will contribute to more complete prevention of traffic accidents.

3,694,691

SUBLIMATION GETTER PUMP WITH CATHODE TRIGGER MEANS

James M. Lafferty, Schenectady, N.Y., assignor to General Electric Company

Filed Nov. 23, 1970, Ser. No. 91,978
Int. Cl. H01j 7/18
U.S. Cl. 315—108 **12 Claims**



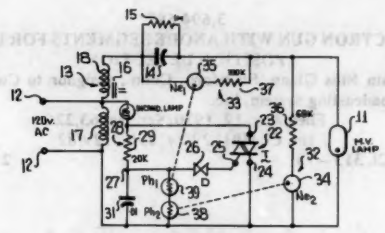
Sublimation getter pump includes, in one embodiment, a cathode electrode made of an active gas gettering material, an anode electrode closely juxtaposed to the cathode electrode and defining therewith an electric discharge gap, and a trigger electrode assembly in close juxtaposition to the cathode electrode. Upon the application of a suitable pulse to the trigger electrode assembly, an electric discharge is established between the cathode and anode electrodes, causing the evolution of active gas gettering material from the cathode electrode. Active gas gettering material is deposited in a clean film upon a closely adjacent surface where it reacts with and removes from the atmosphere active gases, causing the reduction of pressure within the pumped volume.

3,694,692

MERCURY VAPOR LAMP WITH AUXILIARY LIGHT SOURCE

Sidney Pressman, Flushing, N.Y., assignor to Current Industries, Inc., Oceanside, N.Y.

Filed June 24, 1971, Ser. No. 156,387
Int. Cl. H05b 37/02, 39/04
U.S. Cl. 315—154 **20 Claims**



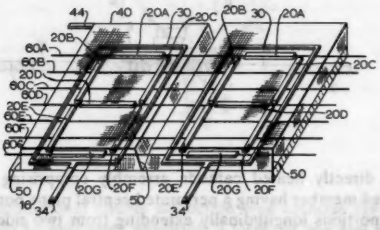
An auxiliary lamp is energized to illumination in response to a mercury vapor lamp being energized to less than full illumination because of either a cold start or a hot start condition existing in the mercury vapor lamp. The mercury vapor lamp is energized from an a.c. source through a ballast circuit including a capacitor. In response to the a.c. voltage across the mercury vapor lamp being less than a predetermined magnitude, as exists during cold start condition, or in response to the capacitor a.c. voltage being less than a predetermined magnitude, as exists in response to hot start conditions, a switch having an a.c. control terminal is closed to enable activation of the auxiliary lamp. In certain embodiments, voltage detectors for the mercury lamp and capacitor a.c. voltages are neon tubes optically coupled with photocells controlling the impedance between the a.c. source and the control electrode of a semiconductor switch, such as a triac. In another embodiment, the voltage detectors for the mercury vapor lamp and capacitor voltage are energizing coils of a.c. relays adapted to handle voltages having a substantial range without inducing chatter into contacts of the relays.

3,694,693

CIRCUIT FOR OPERATING MULTIPLE POSITION DISPLAY TUBES

George E. Holz, North Plainfield, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 5, 1970, Ser. No. 87,058
Int. Cl. H05b 37/00
U.S. Cl. 315—167 **3 Claims**



The circuit of the invention is adapted for operation with a display device which includes a plurality of side-by-side groups of display cathode segments, each group having an

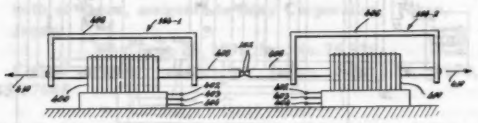
anode electrode, and there being an auxiliary electrode common to all of the groups of electrodes for electrically isolating each group of display segments and preventing spurious glow between groups. In the circuit, means are provided for providing current flow to the auxiliary electrode in proportion to the total number of display cathode segments glowing at any instant.

3,694,694

ARC TESTING DEVICE

Robert S. Russakoff, Weston, Conn.; Carlo Bruno DeLuca, Monroe, Conn.; Henry Schenker, Fairfield, Conn.; Alfred L. Henchcliffe, Trumbull, Conn., and Dennis C. Williams, Norwalk, Conn., assignors to Burndy Corporation

Filed Dec. 29, 1970, Ser. No. 102,283
Int. Cl. H05b 31/20, 31/32
U.S. Cl. 315—194 **3 Claims**



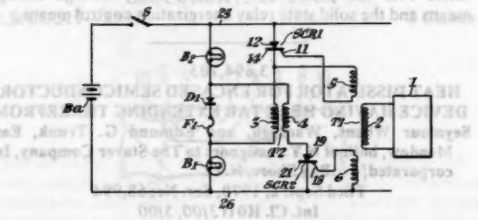
A testing device for switching a pair of electrical contacts to draw an arc at a precisely controlled phase angle and for a precisely controlled time interval across a high voltage AC source. A phase sensor detects a selected phase angle of the source and starts a time delay circuit which measures a selected delay interval. At the end of that interval a triggering circuit turns on a three phase power output stage which energizes a pair of opposed synchronous linear actuators to switch the contacts, thus initiating an arc at a precisely controlled phase angle. Control of the actuator drive voltage enables the contact transport speed to be controlled, which in turn governs arc duration. A protective circuit determines when the arc tester starts and stops operation.

3,694,695

COMMUTATING CIRCUIT

John O. G. Darrow, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Feb. 16, 1971, Ser. No. 115,315
Int. Cl. H03k 17/00
U.S. Cl. 315—222 **18 Claims**



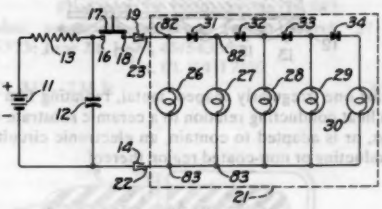
This disclosure relates to a commutating circuit for alternately fully energizing a first load and a second load for use in highway crossing warning applications. Associatively connected to the first and second loads are first and second gates through first and second windings of a commutating transformer, respectively. A source of gating alternately triggers the first and second gates to fully energize the load associated therewith. The commutating transformer alternately disables the first and second gates; thereby alternately substantially deenergizing the first and second loads.

3,694,696

DIODE CIRCUIT FOR SEQUENTIALLY FLASHING PHOTOFLASH LAMPS

Edward L. Laskowski, Parma, Ohio, assignor to General Electric Company

Filed April 17, 1970, Ser. No. 29,547
Int. Cl. H05b 37/00
U.S. Cl. 315—241 P **18 Claims**



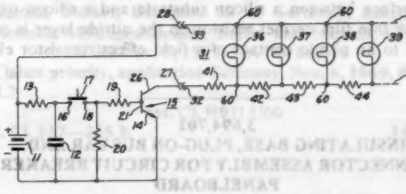
A diode circuit for causing sequential flashing of photoflash lamps from pulses of electrical energy. The diodes are successively connected in series between the individual photoflash lamps. Circuits comprising resistance in combination with diodes also are disclosed. The circuits are inexpensive and may be built into a disposable unitary array of photoflash lamps.

3,694,697

TRANSISTOR CIRCUIT FOR SEQUENTIALLY FLASHING PHOTOFLASH LAMPS

Sang-Chul Kim, 3670 Woodridge Road, Cleveland Heights, Ohio, assignor to General Electric Company

Filed Dec. 28, 1970, Ser. No. 101,861
Int. Cl. H05b 41/34, 41/38
U.S. Cl. 315—325 **8 Claims**



A circuit combination of impedance devices and a transistor amplifier for causing sequential flashing of a plurality of photoflash lamps by sequential firing voltage pulses. The transistor amplifier is connected between a source of firing pulses and an impedance network constituted by the flash lamps and impedance devices, this impedance network functioning as the output load of the amplifier. The transistor amplifier causes differing amounts of sequential firing pulse power to be applied to the impedance network, in accordance with changing impedance of the network as the various lamps are flashed, so that the lamps will be flashed by equal amounts of firing pulse energy.

3,694,698

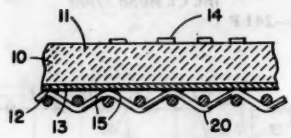
Patent Not Issued For This Number

3,694,699

CERAMIC BASED SUBSTRATES FOR ELECTRONIC CIRCUITS WITH IMPROVED HEAT DISSIPATING PROPERTIES AND CIRCUITS INCLUDING THE SAME

Christopher L. Snyder, Plainfield, and Philip S. Hessinger, West Caldwell, both of N.Y., assignors to National Beryllia Corp., Haskill, N.J.

Filed March 30, 1970, Ser. No. 23,568
Int. Cl. H05k 7/20
U.S. Cl. 317—100 3 Claims



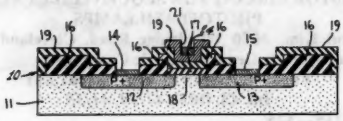
At least one irregularly shaped, metal, radiating film is applied in heat conducting relation to a ceramic substrate which contains, or is adated to contain, an electronic circuit on a non-conducting or non-coated region thereof.

3,694,700

INTEGRATED CIRCUIT INCLUDING FIELD EFFECT TRANSISTOR AND CERMENT RESISTOR

George M. Low, Acting Administrator of the National Aeronautics and Space Administration to an invention of; George A. Brown, 919 Melrose, Richardson, Tex., and Victor Harrap, 3603 High Vista Drive, Dallas, Tex.

Filed Feb. 19, 1971, Ser. No. 116,778
Int. Cl. H05k 3/10
U.S. Cl. 317—101 A 11 Claims



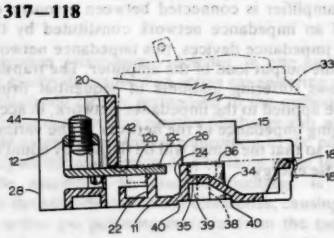
A single integrated circuit chip includes a field effect transistor having an insulating layer of silicon nitride covering an interface between a silicon substrate and a silicon oxide layer. A thin film cermet resistor on the nitride layer is connected to an ohmic contact of a field effect transistor electrode.

3,694,701

INSULATING BASE, PLUG-ON BUS BAR AND CONNECTOR ASSEMBLY FOR CIRCUIT BREAKER PANELBOARD

Harris I. Stanback, Lexington, N.Y., assignor to Square D Company, Park Ridge, Ill.

Filed June 9, 1971, Ser. No. 151,216
Int. Cl. H01r 9/16
U.S. Cl. 317—118 2 Claims



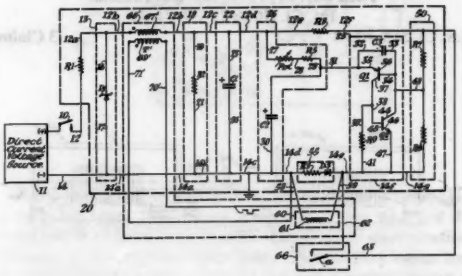
Each of a plurality of integral plug-on bus bar and connector body members is secured to an insulating base of a circuit breaker panelboard or load center by inserting a bus bar portion of the member through a barrier portion of the base and straightening an up-turned tang on the bus bar portion to dispose the tang in interlocking relationship with another portion of the base.

3,694,702

FAIL-SAFE TIME DELAY RELAY

William R. Popp, Allison Park, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Aug. 25, 1971, Ser. No. 174,614
Int. Cl. H01h 47/18
U.S. Cl. 317—141 S 3 Claims



This invention relates to a fail-safe solid state time element relay circuit to prevent relay energization and pickup where there has been an open circuit condition during the timing cycle. The circuit includes the following components, electrically connected respectively to each other: an externally controlled direct current voltage source, a predetermined time delay voltage storage means, a solid state relay energization control means and a relay. In addition there is safety voltage storage means respectively electrically connected to the direct current voltage source and to a pulse source which is in turn electrically coupled to the relay to offset the charge of the predetermined time delay storage means in the event that the direct current voltage source should be momentarily disconnected from the remainder of the time element relay circuit to thereby ensure there would not be a relay actuation before the end of the predetermined time delay.

In one embodiment of the invention the discharge means is a current transformer which produces a pulse and has a primary winding electrically connected in series with the externally controlled direct current voltage source and a secondary winding electrically connected to the relay.

In the second embodiment the pulse transformer is a voltage transformer with its primary winding connected in series with the externally controlled direct current voltage source and in series with the predetermined time delay voltage storage means and the solid state relay energization control means.

3,694,703

HEAT DISSIPATOR FOR ENCASED SEMICONDUCTOR DEVICE HAVING HEAT TAB EXTENDING THEREFROM

Seymour Wilens, Wantagh, and Edmund G. Trunk, East Meadow, both of N.Y., assignors to The Staver Company, Incorporated, Bay Shore, N.Y.

Filed Sept. 2, 1970, Ser. No. 68,994
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R 9 Claims

A heat dissipator is adapted for use with an encased semiconductor device having a heat conductive tab extending through its casing. The dissipator comprises a stamped sheet metal body having a slot formed in one edge thereof by means of bent over fingers, the slot being adapted to firmly engage the heat conductive tab on the transistor to provide a solid heat path from the tab to the sheet metal body. In one embodiment the fingers are bent over along a line perpendicular to

the direction of their extension. In the second and third embodiments the projections are bent over along a line oblique to

the direction of their extension. An offset leg is provided in two embodiments for stabilization of the semiconductor body on a circuit board.

3,694,704

SEMICONDUCTOR DEVICE

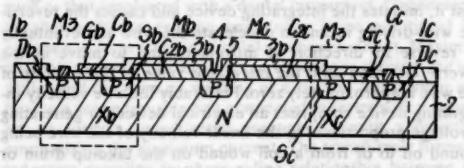
Tetsuo Ando, Tokyo, and Hiroshi Yamazaki, Kanagawa-ken, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sept. 28, 1970, Ser. No. 75,910

Claims priority, application Japan, Sept. 29, 1970, 45/77645

Int. Cl. H01l *19/00*

U.S. Cl. 317—235 R **4 Claims**



A semiconductor for a memory circuit has a semiconductor substrate with a plurality of MIS transistors formed therein, and a conductive layer is provided on an insulating layer of the semiconductor device to supply a clock pulse to said memory circuit and is connected to a diffusion region formed in the substrate under the conductive layer.

3,694,705

SEMICONDUCTOR DIODE WITH PROTECTIVE RING

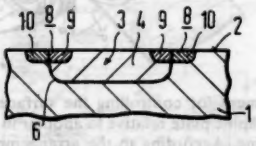
Wolfgang Wenzig, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Feb. 8, 1971, Ser. No. 113,382

Claims priority, application Germany, Feb. 13, 1970, P 20 06 729.2

Int. Cl. H01l *11/00, 15/00*

U.S. Cl. 317—235 R **3 Claims**



In a semiconductor diode in which a zone of another conductance type is inserted into the surface of a zone of one conductance type, the zone of the other conductance type is enclosed by a ring-shaped region of the other conductance type, the depth of penetration of the ring-shaped region being less than the depth of penetration of the zone of the other conductance type. Due to appropriate doping of the ring-shaped region only the middle portion of the PN junction which possesses a curvature, participates in the electrical breakdown. The semiconductor diode according to the present invention has improved characteristic data.

3,694,706

Patent Not Issued For This Number

3,694,707

SEMICONDUCTOR DEVICE

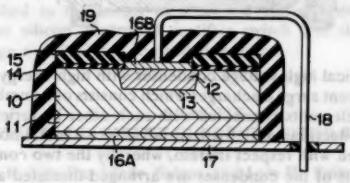
Masakatsu Nakamura; Toshio Yonezawa; Taketoshi Kato, all of Yokohama; Masaharu Watanabe, Kawasaki, and Minoru Akatsuka, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co. Ltd., Kawasaki-shi, Japan

Filed Sept. 29, 1970, Ser. No. 76,582

Claims priority, application Japan, March 27, 1970, 45/25373; June 24, 1970, 45/54335

Int. Cl. H01l *7/00*

U.S. Cl. 317—235 R **8 Claims**



A semiconductor device comprising a semiconductor substrate having a pn-junction of which end is exposed at one main face of the substrate, and an insulating film covering the exposed end of the pn-junction, the protecting film including arsenic and phosphorus.

3,694,708

CONTACT ARRANGEMENT FOR EMITTER ZONE OF SEMICONDUCTOR DEVICE

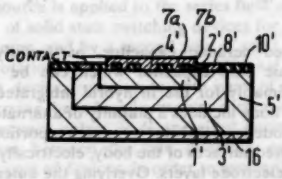
Manfred Arlt, Krailling; Joachim Dathe, Munich, and Helmut Guckel, Baldham, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Nov. 3, 1970, Ser. No. 86,465

Claims priority, application Germany, Nov. 6, 1969, P 19 55 954.7

Int. Cl. H01l *5/00*

U.S. Cl. 317—235 R **3 Claims**



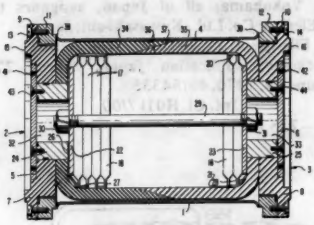
The emitter zone of a transistor has a p-n junction which limits the surface thereof and an edge formed by the p-n junction between the emitter and base zones. A contact arrangement comprises contact material provided on only part of the surface area of the emitter zone so that the surface area of the emitter zone in the vicinity of the emitter edge is free of contact material. Insulating material covers the surface area of the emitter zone which is free of contact material. The contact material covers at least part of the insulating material.

3,694,709

ELECTRICAL HIGH VOLTAGE CONDENSER FOR PULSE DISCHARGES

Dieter Kind, Knappstrasse 4, 33 Braunschweig; Manfred Naglik, Am Spitzen Hey 26, Braunschweig-Mascherode; Albert Kaltofen, Herrenleite 1, Amlingstadt, and Karl Zwecker, Oberer Stephensberg 93a, 86 Bamberg, all of Germany

Filed Sept. 21, 1971, Ser. No. 182,452
Int. Cl. H01g 3/28
U.S. Cl. 317—242 15 Claims



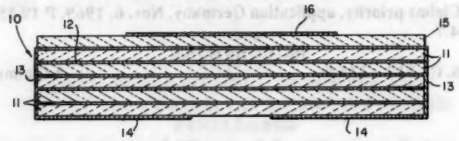
An electrical high voltage condenser with high energy content for current surge discharges which consists of a number of condenser elements connected with each other by series and parallel connections, which are installed into a metal housing and insulated with respect thereto, whereby the two connecting terminals of the condenser are arranged insulated at opposite surfaces of the metal housing and the connecting terminals are arranged at least approximately in a plane with connecting elements of the metal housing for external connections.

3,694,710

VARIABLE CAPACITANCE MULTILAYERED CERAMIC CAPACITOR

John G. Kirschner, Northbrook, Ill., assignor to P. R. Mallory and Co. Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 876,969, Nov. 14, 1969. This application April 13, 1970, Ser. No. 27,574
Int. Cl. H01g 1/00
U.S. Cl. 317—261 5 Claims



A multilayered ceramic capacitor, particularly a multilayered ceramic chip capacitor which can be varied in capacitance, primarily for use in hybrid integrated circuits. The capacitor's body includes a plurality of alternate ceramic and inner electrode layers. Outer termination portions, on the oppositely opposed surfaces of the body, electrically connects alternate inner electrode layers. Overlying the outer termination layer portions on one of said oppositely opposed surfaces is a ceramic layer having an external counterelectrode layer surface. The capacitor can be varied in capacitance by varying the surface area of the counterelectrode.

ERRATUM

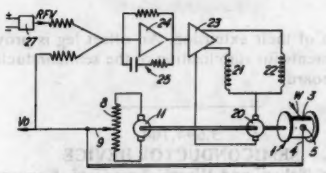
For Class 317—234 R see:
Patent No. 3,694,719

3,694,711

APPARATUS FOR DETECTING FAULTS IN ELONGATED FLEXIBLE MATERIAL

Zbigniew Bonikowski, London, W.5, and Bruce Henry Keen, Hounslow, both of England, assignors to British Insulated Callendar's Cables Limited, London, England

Filed April 26, 1971, Ser. No. 137,177
Claims priority, application Great Britain, April 27, 1970, 20,025/70
Int. Cl. H02p 7/00
U.S. Cl. 318—6 13 Claims



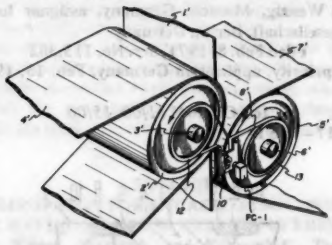
Apparatus for passing wire from a reversible supply drum through or past at least one fault detector to a reversible take-up drum and, upon detection of a fault, for automatically decelerating and reversing the movement of the wire comprises reversible means, for instance a split field reversible motor, for driving the wire through the apparatus and a device for integrating the velocity of the wire. A signal generated by the fault detector, when a faulty region of wire passes through or past it, initiates the integrating device and causes the reversible wire-driving means to decelerate the wire and eventually to reverse its direction of movement and to move in the reverse direction until the integrated value of the velocity of the wire is approximately zero. Preferably the wire velocity-integrating device comprises an electrical device for generating a voltage proportional to the linear velocity of the wire being wound on to or from a coil wound on the take-up drum or supply drum and means for integrating the voltage signal generated by the electrical device.

3,694,712

SPEED CONTROL APPARATUS

Raymond G. Ticknor, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 1, 1970, Ser. No. 33,566
Int. Cl. H02p 5/46
U.S. Cl. 318—7 8 Claims



An arrangement for controlling the surface speed of one endless xerographic plate relative to another in a duplex xerographic machine. According to the arrangement, an endless member along a first portion thereof is operatively associated with one of the xerographic plates to be driven at a surface speed proportional to the respectively associated xerographic plate and along a second portion thereof is operatively associated with the other of the xerographic plates to be driven at a surface speed proportional to the other of the respectively associated xerographic plates. The endless member along a third portion thereof is formed into a loop, the size of which may vary according to variations in the relative surface speeds

between the xerographic plates. Upon detection in variations in the size of the loop portions of the endless member, the surface speed of the respective xerographic plates may be operatively varied to maintain equal surface speeds between each of the xerographic plates.

3,694,713

ULTRASONIC GENERATORS

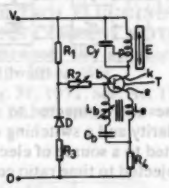
Lennart Axel Duren, and Arne Andersson, both of Nynashamn, Sweden, assignors to Amlab AB, Nynashamn, Sweden

Filed March 6, 1970, Ser. No. 17,080

Claims priority, application Sweden, March 12, 1969, 3405/69

Int. Cl. H02b *9/00*

U.S. Cl. 318—116 **3 Claims**



An ultrasonic generator including an amplifier coupled in oscillator configuration for initiating via an exciting impedance ultrasonic vibrations in an electro-acoustic element such as that associated with a dental instrument. Connected in parallel with the exciting impedance in an additional impedance to form a tuned parallel resonance circuit. Maximum current is supplied to the exciting impedance through the amplifier and the primary winding of a current transformer also having a secondary winding connected in series with a capacitor to form a tuned series resonance circuit additionally emphasizing the maximum current. The transformer forms an inductive coupling in phase-aiding relationship between the output circuit of the amplifier and the control electrode thereof for continuously maintaining optimal effect at the prevailing resonance frequency with an automatic adaptation of the oscillation frequency to variations from the nominal mechanical resonance frequency of the electro-acoustic element.

3,694,714

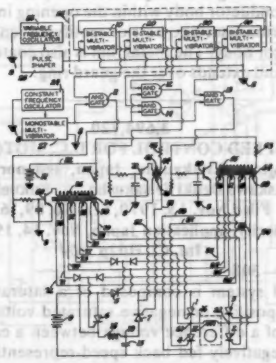
SINGLE PHASE INVERTER CONTROL CIRCUIT

Michael B. Miller, Bellbrook, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 28, 1971, Ser. No. 184,353

Int. Cl. H02k *29/00*

U.S. Cl. 318—138 **3 Claims**



A four-stage shift register, responsive to the output signals of a variable frequency oscillator, produces a discrete square wave output signal during each of four time periods, each of which is applied to a corresponding AND gate. The output signals of a constant frequency oscillator are applied to all of the AND gates in parallel. The output signals of the AND gate corresponding to the first time period are applied across the gate-cathode electrodes of the two inverter silicon controlled rectifiers through which energizing current may be supplied to the motor in a first direction from a direct current potential source, a power silicon controlled rectifier switch through which the source of direct current operating potential is applied across the inverter circuit and a capacitor charge circuit silicon controlled rectifier through which an extinguishing capacitor is charged across the source of direct current operating potential, the output signals of the AND gates corresponding to the second and fourth time periods are applied across the gate-cathode electrodes of an extinguishing silicon controlled rectifier through which the charge upon the extinguishing capacitor is applied across the anode-cathode electrodes of the power silicon controlled rectifier switch in an inverse polarity relationship and the output signals of the AND gate corresponding to the third time period are applied across the gate-cathode electrodes of the other two inverter silicon controlled rectifiers through which energizing current may be supplied to the motor in a second opposite direction, the power silicon controlled rectifier switch and the capacitor charge circuit silicon controlled rectifier.

3,694,715

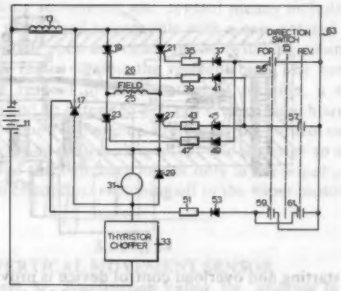
CONTACTLESS DIRECT CURRENT MOTOR REVERSING CIRCUIT

John R. Van Der Linde, Salem, and Lyle W. Fairey, Roanoke, both of Va., assignors to General Electric Company

Filed Sept. 28, 1970, Ser. No. 75,853

Int. Cl. H02r *5/16*

U.S. Cl. 318—139 **5 Claims**



A contactless, reversing circuit for a direct current motor, wherein the current from a variable frequency pulsed, direct current source is applied to the series field of the motor by a first pair of solid state switching devices for forward rotation of the motor, and by a second pair of solid state devices for reverse rotation of the motor. An additional single solid state switching device, common to both pairs of devices and normally carrying the induced armature current during a blocking period between pulses, is de-energized during the transfer of conduction between the one direction pair to the other direction pair of devices, in order to assure the blocking state of the one pair before the other pair is turned on.

3,694,716

GYROMOTOR SYNCHRONIZATION SYSTEM

Paul D. Eland, Dumont, N.J., assignor to Singer-General Precision, Inc., Little Falls, N.Y.

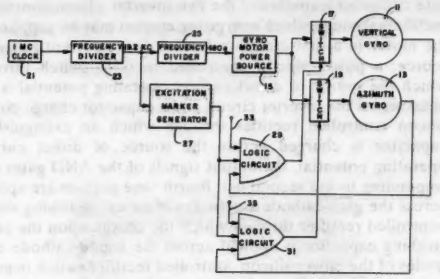
Filed Aug. 14, 1970, Ser. No. 70,614

Int. Cl. H02p *7/36*

U.S. Cl. 318—175 **5 Claims**

In a system employing gyroscopes driven by AC motors at synchronous speeds the motors are controlled so that their ro-

tors always occupy the same synchronous position with respect to the rotating magnetic fields in the motors. This control, which makes the drift of the gyroscope due to rotor unbalance constant, is achieved by generating a rotor marker pulse each time the rotor passes through a predetermined angular position and causing the rotor to be positioned so that this pulse occurs at a preselected point in the cycle of energization of the AC motor.

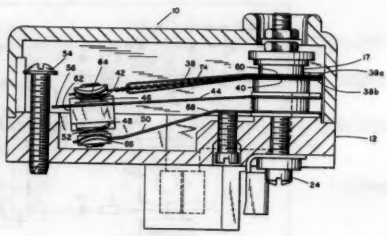


3,694,717

STARTING AND OVERLOAD CONTROL DEVICE FOR ELECTRIC MOTORS

Robert F. Prouty, and James J. Smith, both of Logansport, Ind., assignors to Essex International Inc., Fort Wayne, Ind.

Filed Oct. 26, 1971, Ser. No. 192,266
Int. Cl. H01h 37/66, 61/03; H02k 17/08
U.S. Cl. 318—221 C 5 Claims



A starting and overload control device is provided whereby current is automatically supplied to both the starting and the main winding of an electric motor when the motor is first energized. Current to the starting winding is automatically terminated a predetermined time after the motor commences running. Also, the device automatically de-energizes the electric motor during overload conditions. The current control is accomplished by means of a bimetallic strip together with a heater operating in conjunction with a pair of leaf springs, all of which are mounted for cantilever movement.

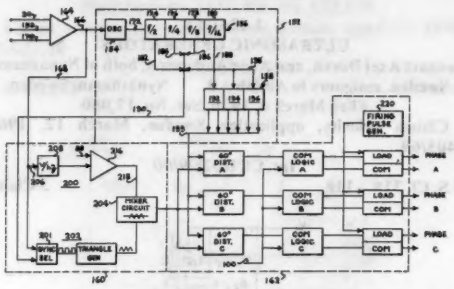
3,694,718

METHODS OF INVERTER VOLTAGE CONTROL BY SUPERIMPOSED CHOPPING

Carlton E. Graf, Harborcreek, and Werner K. Volkmann, Fairview, both of Pa., assignors to General Electric Company

Filed Oct. 19, 1970, Ser. No. 81,758
Int. Cl. H02p ; H02m
U.S. Cl. 318—227 7 Claims

An adjustable speed polyphase a-c motor drive featuring an inverter in which the same power switching devices, typically SCRs, are controlled to provide both variable frequency and variable voltage polyphase power to the motor. This is accomplished by sequentially operating selected switching devices in a time ratio controlled mode of operation within the principal polyphase operation thereof. During successive 60 electrical degree intervals in a three phase inverter, the switching devices of two phases are connected to a source of electrical potential of one polarity and a switching device of the remaining phase is connected to a source of electrical potential of the other polarity is subjected to time ratio controlled switching.

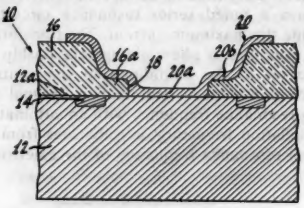


3,694,719

SCHOTTKY BARRIER DIODE

Arjun Nath Saxena, Princeton Jct., N.J., assignor to RCA Corporation

Filed Nov. 27, 1970, Ser. No. 92,968
Int. Cl. H01l 9/00
U.S. Cl. 317—234 R 5 Claims



A Schottky barrier diode includes a body of a semiconductor material of one conductivity type having a guard ring region of the opposite conductivity type therein at a surface of the body. The guard ring extends along the surface of the body in a closed path. A layer of an insulating material is on the surface of the semiconductor body and has an opening therethrough extending to the area of the semiconductor body surface within the guard ring. A metal layer is on the surface of the semiconductor body within the opening in the insulating layer and forms a surface barrier rectifying junction with the semiconductor body. The metal film is also coated on the insulating layer and extends over the guard ring.

3,694,720

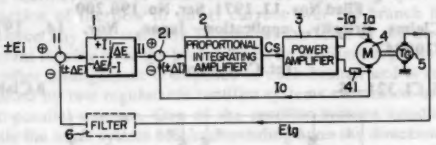
SPEED CONTROL FOR D.C. MOTOR

Kazuo Nakajima, Kitakyushu, Japan, assignor to Kabushiki Kaisha Yaskawa Denki Seisakusho, Fukuoka-ken, Japan

Filed Nov. 13, 1970, Ser. No. 89,163
Claims priority, application Japan, Nov. 14, 1969, 44/90749
Int. Cl. H02p 3/04
U.S. Cl. 318—308 11 Claims

A comtrol system is composed of a saturation amplifier delivering a positive or negative saturated voltage depending on the sign of a difference voltage between a command voltage and a negatively fed back speed-representing voltage of the motor to be controlled, a proportional-intergrating circuit (operable in P-I mode) receiving a difference voltage between

the output of the saturation amplifier and a negatively fed back voltage representing the actual armature current through the motor as its input, and a power amplifier in the form of a



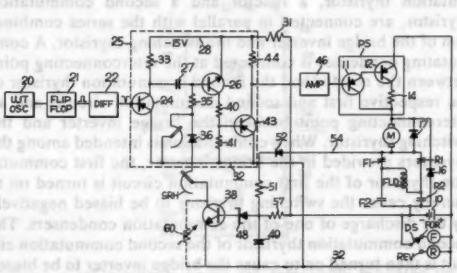
chopper amplifier operated in a shorter repetition period in comparison with the mechanical time constants of the d.c. motor for supplying an output current to the d.c. motor.

3,694,721

SYSTEM TO CONTROL PLUGGING OF VEHICLE DIRECT CURRENT MOTOR

Luke F. Henry, Homewood, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Aug. 31, 1971, Ser. No. 176,591
Int. Cl. H02r 5/06
U.S. Cl. 318—341 **17 Claims**



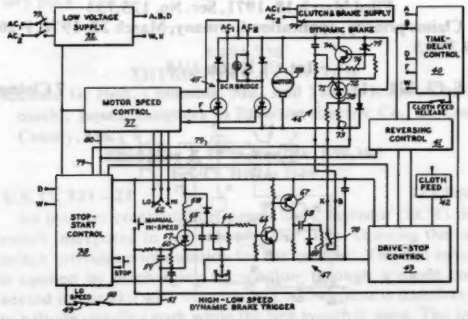
A soft-plugging control for a DC traction motor has a speed rheostat which regulates the duty cycle of variable width pulses applied by a power switch from a battery to the motor armature, means for algebraically summing the voltage across the power switch and the armature and means for decreasing the repetition rate of the pulses when said algebraic sum decreases below a predetermined magnitude as the armature voltage decays when said armature reverses direction.

3,694,722

SPEED REDUCING APPARATUS FOR A CLOTH SPREADING MACHINE

Robert G. Reed, Nashville, Tenn., assignor to Cutters Machine Company, Inc., Nashville, Tenn.

Filed March 18, 1971, Ser. No. 125,470
Int. Cl. H02r 3/12
U.S. Cl. 318—368 **7 Claims**



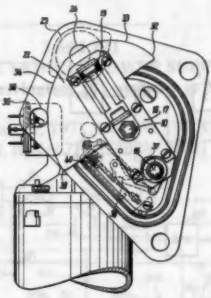
An electrically driven and controlled cloth spreading machine including means for controlling the high and low speeds of the machine, and for dynamically braking the machine from a high speed to a pre-set low speed upon signal.

3,694,723

MOTOR VEHICLE WINDSHIELD WIPER HAVING A PARKING POSITION OUTSIDE THE WIPING AREA

Theodor Schneider, Seestrasse 30, 7121 Freudental Wurttemberg; Karl-Friedrich Schubert, Friedrich Naumannstrasse 10, and Jacob Heinz, Frankfurter Strasse 15, both of 712 Bietigheim Wurttemberg, all of Germany

Filed Aug. 24, 1971, Ser. No. 174,336
Claims priority, application Germany, Dec. 30, 1970, P 20 64 423.9
Int. Cl. H02p 7/00
U.S. Cl. 318—443 **5 Claims**



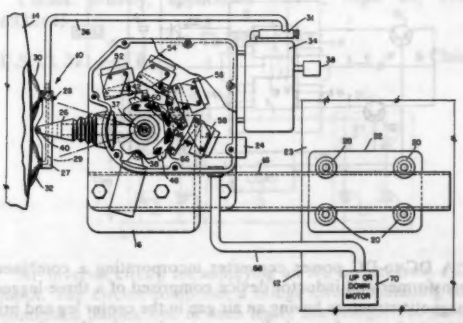
A windshield wiper for motor vehicles has a parking position of the wiper arm outside the wiping area, and includes a motor having a drive shaft, a crank guide member secured to the shaft, a resiliently biased crank member adjustable longitudinally of the guide member, switching means operable to initiate a parking movement and control means included in the switching means and engageable with a cam rotated with the crank member, upon activation of the switching means, to very the crank radius against the resilient bias. The control cam has, with respect to its direction of rotation, a steep ascent surface and an extended descent surface, which are engageable by the control member. Preferably the control cam is fixedly connected to the crank member and actuates an additional contact of the switching means only in the wiper parking position, to effect final switching off of the wiper motor.

3,694,724

VERTICAL MOVEMENT SENSOR

Walter S. Eggert, Jr., Huntingdon Valley, Pa., assignor to The Budd Company, Philadelphia, Pa.

Filed Sept. 29, 1970, Ser. No. 76,346
Int. Cl. B64c 17/02
U.S. Cl. 318—648 **5 Claims**



An automatic levelling system is provided for maintaining the relative position of two bodies. An extendible member

movably mounted on one of the bodies is attached to the other body. Means including the extendible member are responsive to the relative movement between the two bodies to restore them to their original relative positions.

3,694,725

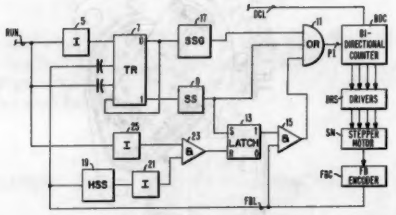
STEPPING MOTOR CONTROL SYSTEM USING PULSE INJECTION

Dennis G. Abraham, Vestal, and Joseph P. Pawletko, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,704

Int. Cl. H01k 37/00

U.S. Cl. 318—685 **5 Claims**



Single step operation of a stepping motor and deceleration of the stepping motor utilized in a closed-loop mode are obtained utilizing a pulse injection arrangement in which a suitable plurality of pulses are supplied in rapid succession to the drive circuits for the stepping motor in order to quickly step the magnetic fields to the proper condition at a rate too fast for the rotor to follow.

3,694,726

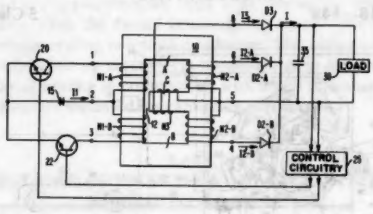
COMBINED TRANSFORMER AND INDUCTOR DEVICE

John R. Cielo, Kingston, and Harry S. Hoffman, Jr., Saugerties, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 691,996, Dec. 20, 1967, Pat. No. 3,553,720. This application March 30, 1970, Ser. No. 29,313

Int. Cl. H02m 3/28

U.S. Cl. 321—2 **11 Claims**



A DC-to-DC power converter incorporating a combined transformer and inductor device comprised of a three-legged magnetic structure having an air gap in the center leg and primary and secondary windings arranged on the three legs to provide combined cooperative transformer and inductor action.

3,694,727

INVERTER DEVICE

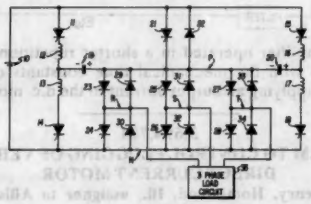
Nagataka Seki, Tokyo, Japan, assignor to Tokyo Shibaura Electric Company, Ltd., Kanagawa-ken, Japan

Filed Nov. 12, 1971, Ser. No. 198,200

Claims priority, application Japan, Nov. 14, 1970, 45/100047

Int. Cl. H02m 7/52

U.S. Cl. 321—5 **8 Claims**



A thyristor bridge inverter is energized from a D.C. voltage supply through a switching thyristor. First and second commutation circuits, each having a series combination of a first commutation thyristor, a reactor and a second commutation thyristor, are connected in parallel with the series combination of the bridge inverter and the switching thyristor. A commutating condenser is connected at the interconnecting point between the reactor and the second commutation thyristor of the respective first and second commutation circuits and an interconnecting point between the bridge inverter and the switching thyristor. When commutation is intended among the thyristors provided in the bridge inverter, the first commutation thyristor of the first commutation circuit is turned on to thereby cause the switching thyristor to be biased negatively by the discharge of one of the commutation condensers. The second commutation thyristor of the second commutation circuit is then turned on to cause the bridge inverter to be biased negatively by the discharge of the other commutation condenser. Similarly, the first commutation thyristor of the second commutation circuit and the second commutation thyristor of the first commutation circuit are turned on when sequential commutation of the inverter is made. In this way, it is possible to turn on the second thyristor in one of the commutation circuits before the first thyristor in the other commutation circuit is turned off and without causing a short circuit across the D.C. voltage supply such that the deenergization period of the inverter from the D.C. voltage supply is effectively reduced during the commutation period of the inverter.

3,694,728

CIRCUIT ARRANGEMENT FOR ALTERING CURRENT DISTRIBUTION IN MESH-OPERATED HIGH VOLTAGE DIRECT CURRENT TRANSMISSION NETWORKS

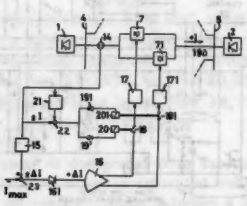
Karl-Werner Kanngiesser, Viernheim, and Dietrich Kluge, Mannheim, both of Germany, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed March 18, 1971, Ser. No. 125,733

Claims priority, application Germany, March 25, 1970, P 20 14 375.3

Int. Cl. H02m 1/18

U.S. Cl. 321—11 **7 Claims**



A high voltage direct current mesh-operated network comprises several interconnected stations for effecting an

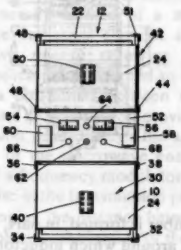
exchange of power by means of converters located at the stations and which are connected to alternating current networks, the station converters being operated selectively either in a rectifier mode or an inverter mode depending upon the direction of the flow of direct current over the branch line between any two stations. To control the level of the direct current flowing over the branch lines, an auxiliary regulatable rectifier arrangement is disposed in each branch and is constituted by two regulatable rectifier systems connected in an anti-parallel manner. One of the rectifier systems conducts while the other system blocks depending upon the direction of the current flow in the branch.

3,694,729

PORTABLE ELECTRIC POWER APPARATUS

Jack D. Jones, Lima, Ohio, assignor to National Can Retinning Company, Lima, Ohio

Filed Dec. 28, 1971, Ser. No. 212,918
Int. Cl. H02j 7/00
U.S. Cl. 307—150 **18 Claims**



Two portable battery packs are removably mounted on a truck and connected to the truck's electrical system. Each pack contains four 6-volt battery units which are wired to a battery pack connector mounted at the rear of the battery pack housing. Means are provided for connecting the battery units in parallel for charging by the truck generator alternator or battery. When the pack is (1) withdrawn from the truck, and (2) used to power a tool, the battery units are connected in suitable series — parallel — to provide output voltages greater than the charging voltage.

In one embodiment, a charging rack is permanently mounted on and to the truck, the rack having a mating connector which during the charging process engages the battery pack connector. A program connector at other times engages the battery pack connector to provide proper output voltage at the battery pack output connector.

In another embodiment, the charging rack is dispensed with and two double pole double throw switches are used to effect the different series or parallel connections in and to the battery pack.

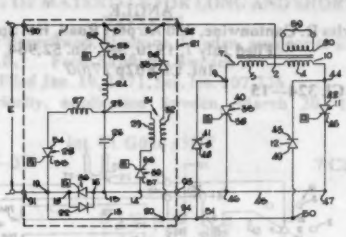
3,694,730

THYRISTOR C. C. SWITCH

Richard G. Hoft, Columbia, Mo., and Tsuneo Kume, Kandamachi, Japan, assignors to Emerson Electric Co., St. Louis County, Mo.

Filed May 3, 1971, Ser. No. 139,393
Int. Cl. H02m 7/48
U.S. Cl. 321—21 **12 Claims**

An inverter commutation circuit has a thyristor (SCR) line switch interposed in one side of a D.C. line. Opening the line switch provides commutation for the inverter. The line switch is opened by discharging a capacitor through a diode connected in parallel with the switch. Load current is transferred to a diode coasting path while the line switch is open. The line switch is closed and the capacitor is charged to commutation voltage before the switch is reopened. Frequency control is provided by the cyclic repetition of the line switch and corresponding inverter operation. The line switch may be applied in a variety of inverter systems. The circuit provides means for



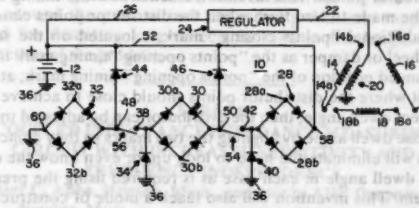
a method of static inverter commutation by interruption of the supply line.

3,694,731

MULTIPLE MODE VEHICLE POWER SUPPLY SYSTEM

James R. Cherry, Barrington, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 18, 1971, Ser. No. 154,332
Int. Cl. H02m 7/04; H02h ; H02j
U.S. Cl. 321—27 R **5 Claims**



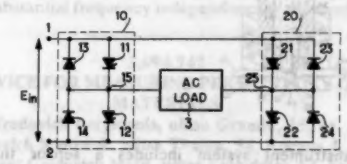
A motor vehicle power supply system includes an alternator having a three winding stator with the windings being disconnected electrically. The output of each winding is rectified by a full wave bridge circuit. Switches are positionable to a first condition for connecting the bridge circuit outputs in series at relatively low alternator speeds, to a second condition for connecting two of the bridge circuit outputs in series and in parallel with the third bridge circuit output for higher alternator speeds and to a third condition for connecting the bridge circuit outputs in parallel for even higher alternator speeds.

3,694,732

INVERTER PROVIDING A VARIABLE OUTPUT VOLTAGE

Pierre Nollace, Lamanon, France, assignor to Compagnie Generale D' Electronique Industrielle Lepaute, Paris, France

Filed Sept. 22, 1970, Ser. No. 74,343
Claims priority, application France, Sept. 23, 1969, 6932445
Int. Cl. H02m 7/48
U.S. Cl. 321—45 R **6 Claims**



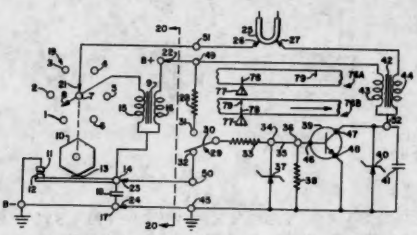
An inverter circuit for supplying an AC output from a DC input. The circuit comprises a bridge circuit including four controlled diodes, one in each leg of the bridge. The diodes are fired by a control circuit in such a manner that an AC output is supplied to a load connected across a diagonal of the bridge.

3,694,733

AUTOMOTIVE TIMING LIGHT TO MEASURE DWELL ANGLE

Charles R. Cantonwine, 950 Airport Road, Hot Springs, Ark.

Filed July 7, 1970, Ser. No. 52,964
Int. Cl. F02p 17/00
U.S. Cl. 324—15 3 Claims



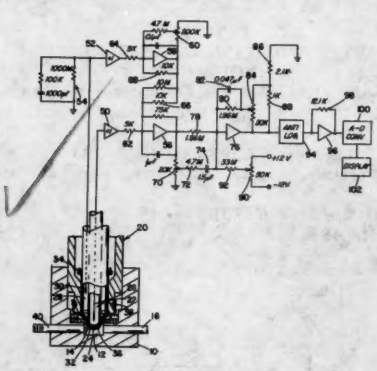
The conventional timing light used in automotive engine adjustments, flashes a stroboscopic light on a timing mark, usually located on the flywheel or front damper, indicating the firing of cylinder number 1, as caused by the *opening* of the distributor points. This invention teaches how the timing light can be made to also flash when the distributor points *close*. If an additional "points closing" mark is located on the same flywheel or damper as the "points opening" timing mark in an advanced position of the "points opening" timing mark, at the point where the distributor points should close to achieve the correct dwell angle, then the distributor can be adjusted to the precise dwell angle by aligning the two marks so they coincide. This will eliminate the need to look up, or even know the correct dwell angle in each case as is required using the present system. This invention will also teach a mode of construction to provide for measuring the dwell angle on engines not yet provided with the additional "points closing" mark.

3,694,734

SENSOR INSTRUMENTATION

David E. Blackmer, Harvard, Mass., assignor to Instrumentation Laboratory, Inc., Lexington, Mass.

Filed April 7, 1970, Ser. No. 27,198
Int. Cl. G01n 27/42
U.S. Cl. 324—29 12 Claims



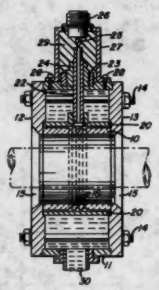
An instrument system includes a sensor that has a logarithmic response, an antilog circuit and output means connected to the output of the antilog circuit to provide, as a linear function signals representative of the constituent sensed by the sensor. Balance adjust means for inserting a first compensating function in an additive manner to the signal from the sensor is connected in circuit between the sensor and antilog circuit and slope adjust means for inserting a second compensating function to change the slope characteristic of the signal applied to the antilog circuit is connected in circuit between the balance adjust means and the antilog circuit.

3,694,735

WATER-COOLED EDDY-CURRENT TRANSDUCER FOR TESTING PRODUCT WHILE AT HIGH TEMPERATURE

Michael L. Mester, Lower Burrell, Pa., assignor to United States Steel Corporation

Continuation-in-part of Ser. No. 775,002, Nov. 12, 1968, abandoned. This application July 27, 1970, Ser. No. 58,423
Int. Cl. G01r 33/12
U.S. Cl. 324—40 3 Claims



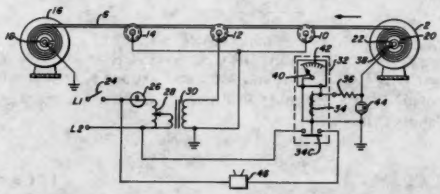
A circular chamber is formed, in part, by a cylinder of heat-resistant material around which inductor coils are wound. An enclosing sleeve is telescoped over the cylinder. The cylinder admits therethrough axially moving elongated product at high temperature. A nipple extending radially of the cylinder and outwardly through the chamber accommodates leads connecting the coil to defect-detecting apparatus. The chamber has inlet and outlet connections for circulating cooling liquid therethrough.

3,694,736

APPARATUS FOR LOCATING CONDUCTOR DISCONTINUITY IN SEMI-CONDUCTING SHIELDED CABLE

Frederick W. Wakefield, 26 Sunset Drive, Northboro, Mass., assignor to United States Steel Corporation

Filed March 16, 1971, Ser. No. 124,890
Int. Cl. G01r 31/02
U.S. Cl. 324—51 2 Claims



Detection of conductor discontinuity location in a semiconducting shielded electric cable. The cable is passed over spaced apart electrical contacts providing an alternating current through the shield between the contacts. As the cable is moved over the contacts, a capacitance coupled current is induced in the conductor and a change in the current locates the discontinuity as it passes the electrical contacts.

3,694,737

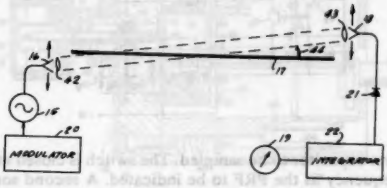
MICROWAVE MOISTURE SENSING SYSTEM AND METHOD

Leroy H. Busker, Rockton, Ill., and Robert J. Mosher, Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Division of Ser. No. 679,325, Oct. 31, 1967, Pat. No. 3,599,088. This application Aug. 3, 1970, Ser. No. 67,643

Int. Cl. G01r 27/04

U.S. Cl. 324—58.5 A 1 Claim



An apparatus for measuring the amount of moisture in a sample which is generally formed of a microwave energy source, a microwave radiating element connected to the source, a microwave energy receiving element, and a microwave energy indication connected to the receiving element. The sample is positioned between the radiating and receiving elements and a structure is provided for changing the energy transmission path through the sample by at least one-half wavelength of the microwave energy. Such means may take the form of a frequency modulator connected to the source, a dielectric disc in the transmission path, or a structure for continuously changing the distance between the radiating element and the sample or combination of these means.

3,694,738

Patent Not Issued For This Number

3,694,739

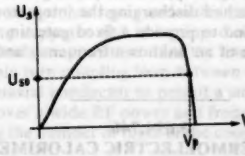
TESTING CIRCUIT FOR A SOLAR BATTERY INCLUDING A VOLTAGE SOURCE CONTROLLED BY THE BATTERY'S TERMINAL VOLTAGE

Alain Francois Joubert, Paris, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed Jan. 30, 1970, Ser. No. 7,284

Int. Cl. H01m 31/04; G01n 27/00; G01r 31/00

U.S. Cl. 324—29.5 4 Claims



The invention concerns a circuit for spot measuring the distinctive voltage-current characteristic of a solar battery subjected to a given degree of illumination, in which the charge circuit of the solar battery being tested comprises, in series, a fixed resistance whose terminal voltage is a measure of the strength delivered by the solar battery, and a voltage source whose instantaneous value depends on that of the battery's terminal voltage and whose variations in value around a central value are opposite to and much greater than the terminal voltage variations of the solar battery around a predetermined value in conformity with the testing conditions.

3,694,740

SYSTEM FOR THE MAGNETIC NON-DESTRUCTIVE TESTING OF MATERIALS FOR LONG AND SHORT DEFECTS

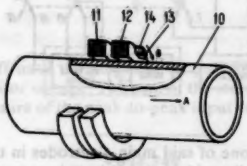
Karl Gunnar Bergstrand, Skultuna, Sweden, assignor to Essem Metotest AB, Fack, Skultuna, Sweden

Filed Jan. 19, 1971, Ser. No. 107,726

Claims priority, application Sweden, March 20, 1970, 3830/70

Int. Cl. G01r 33/12

U.S. Cl. 324—37 7 Claims



A system for electroinductively testing elongated products comprising; a coil system for detecting short defects as seen in the longitudinal direction of the product and inducing a magnetic field in the product to be tested; and a sensing means, e.g. including induction coils, Hall elements or the like, rotating around the product and cooperating with said magnetic field for detecting long defects as seen in the longitudinal direction of the product.

3,694,741

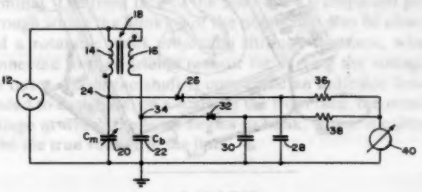
COUPLED INDUCTANCE IMPEDANCE MEASURING CIRCUIT WITH INCREASED SENSITIVITY AND FREQUENCY INDEPENDENCE

Robert C. Abbe, Newton, Mass., assignor to ADE Corporation, Newton, Mass.

Filed Oct. 28, 1970, Ser. No. 84,554

Int. Cl. G01r 11/52, 27/26

U.S. Cl. 324—60 C 5 Claims



An impedance measuring circuit having two closely coupled inductances conducting alternating electric excitation from a grounded source through measuring and balancing impedance branches respectively to ground. Peak detection circuitry referenced to ground in the impedance measuring circuit gives an indication of the difference in the voltage across the measuring and balancing impedances. Where measuring and balancing impedances are capacitive reactances and at source frequencies above resonance of the inductance-capacitance circuit, substantial frequency independence is achieved.

3,694,742

DEVICE FOR MEASURING PERMITTIVITY OF MATERIALS

Karlis Alfredovich Bergmanis, ulitsa Graudu, 15, kv. 1; Erik Ernestovich Klotinish, ulitsa Tvaiku, 54, Korpus 4, kv. 19, and Imant Gustovich Matis, ulitsa Laimdotas, 61, kv. 19, all of Riga, U.S.S.R.

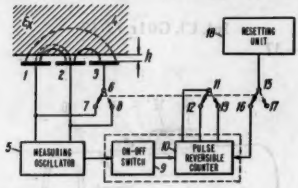
Filed July 15, 1970, Ser. No. 55,025

Int. Cl. G01r 27/26

U.S. Cl. 324—61 QS 2 Claims

A device for measuring permittivity of materials on the basis of at least two different measured capacitance values of a

capacitor connected to the material being tested and to a measuring oscillator the output of which is coupled to the input of a frequency meter in the form of a series combination of a switch and a pulse counter with a resetting unit, said capacitor being formed by at least two main electrodes permanently connected to the input of said measuring oscillator, and one additional electrode which is alternately connected by a changeover switch to one of said main electrodes in the course of measurement, while said resetting unit is connected to said pulse counter in the form of a reversible counter by an on-off switch actuated synchronously with said switch of the measured capacitor electrodes, the direction of counting of said reversible counter being determined by the position of said changeover switch of the measured capacitor electrodes.

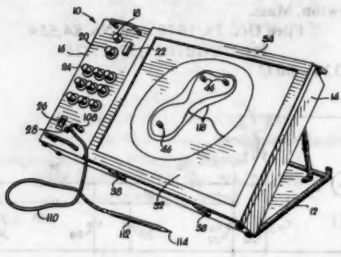


3,694,743

FIELD PLOTTER

George W. Dalke, Lawrence, Kans., assignor to Interpretation Systems Incorporation, Lawrence, Kans.

Filed Oct. 1, 1970, Ser. No. 77,065
Int. Cl. G01r 31/02
U.S. Cl. 324—72 10 Claims



A field plotter for conductive sheet analog simulation having constant current sources and calibration circuitry that permits the resistance of the model to be readily accommodated and enables the operator to normalize the contour voltages by establishing the relative contour value of the point on the sheet of highest potential. The sheet is supported on an easel and connections thereto are made from the front with pins that pierce both the sheet and the easel, leads then being attached to the pins at the rear of the easel. A hold-down frame automatically makes contact with the perimeter of the sheet for those models utilizing a grounded outer boundary.

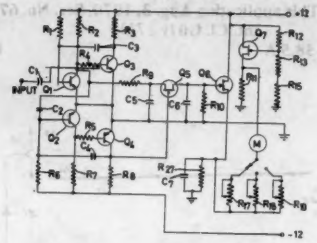
3,694,744

PULSE FREQUENCY DETECTOR

Paul Zoltan Kalotay, Monterey Park, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 871,914, Oct. 28, 1969, abandoned. This application Feb. 8, 1971, Ser. No. 113,172
Int. Cl. G01r 23/02
U.S. Cl. 324—78 E 6 Claims

A circuit for use with a milliammeter or the like calibrated in pulse repetition frequency (PRF). An averaging circuit receives pulses at the PRF to be indicated. The averaging circuit includes a first capacitor which is charged. A substantially isolated second capacitor provides an output through a source follower. A switch connects the capacitors to allow the charge of the first capacitor to be sampled. The switch is closed at the same frequency as the PRF to be indicated. A second source follower has a constant bias. The milliammeter is then connected between the source electrodes of the source followers.

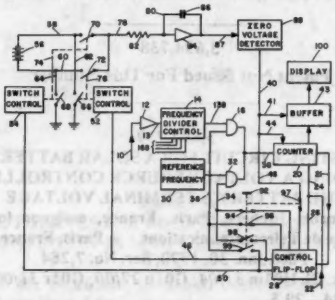


3,694,745

METHOD AND CIRCUIT FOR PROVIDING A FREQUENCY METER HAVING IMPROVED GATE PERIOD MEANS

Guy A. Thrap, San Diego, Calif., assignor to California Instruments Co., Division of Aiken Industries, Inc., San Diego, Calif.

Filed Aug. 13, 1971, Ser. No. 171,523
Int. Cl. G01r 23/02
U.S. Cl. 324—78 D 9 Claims



A frequency meter in which a reference voltage is applied to an integrator circuit for the time period required to count out a given reference frequency, and the polarity of the reference voltage is then switched discharging the integrator circuit for the same time period to provide a fixed gate time period for counting the Hertz of an unknown frequency and displaying same.

3,694,746

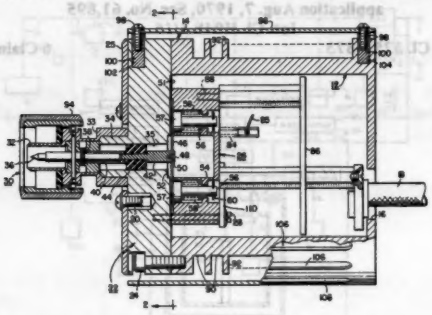
THIN-FILM THERMOELECTRIC CALORIMETER FOR MEASURING LARGE VALUES OF MICROWAVE POWER

Samuel Hopfer, Brooklyn, N.Y., assignor to General Microwave Corporation

Filed Feb. 9, 1970, Ser. No. 9,725
Int. Cl. G01r 21/04, 5/26
U.S. Cl. 324—95 21 Claims

A thermoelectric calorimeter for measuring microwave power in the watt range, and using a thin-film resistive load, maintains the temperature balance of the thermoelectric junctions by means of an aluminum oxide substrate on which the thermoelectric films are deposited. The substrate is effective for conducting the high level of heat energy produced with absorption of input power by the load to a heat sink (which is

also used as the outer conductor of a waveguide that transmits the power to the load) and to a finned housing that receives the heat by conduction from the heat sink and is effective for



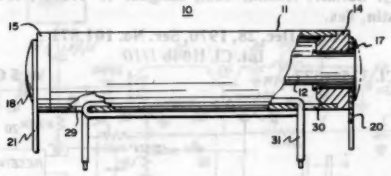
transferring the heat energy to the ambient air by convection. The thin films of the load face frontwards in the unit and an electrical insulation having a low thermal resistance is provided.

3,694,747

RF DIRECTIONAL POWER MONITOR

Winston Wayne White, Hillside, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed July 22, 1970, Ser. No. 57,237
Int. Cl. G01r *21/04*; H01p *5/12*
U.S. Cl. 324—95 7 Claims



An RF directional power monitor includes an air dielectric coaxial line section has inner and outer connectors separated by insulating supports and is equipped with printed circuit board terminals at opposite ends of the line. Provision is made for a multiple turn coupling loop between spaced openings in the outer coaxial conductor to permit a single basic assembly to be used over a wide RF power and frequency range merely by changing the number of turns of the coupling loop.

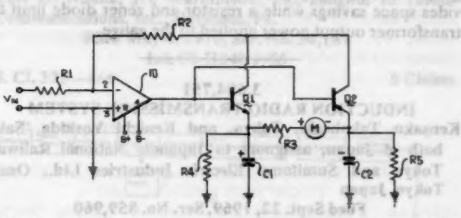
3,694,748

PEAK-TO-PEAK DETECTOR

Norris C. Hekimian, Rockville, Md., assignor to Hekimian Laboratories, Inc., Rockville, Md.

Filed July 19, 1971, Ser. No. 163,872
Int. Cl. G01r *19/16*; H03k *17/66*
U.S. Cl. 324—103 P 3 Claims

A peak-to-peak detector includes an operational amplifier driving the bases of two complementary transistor switches in parallel, amplifier feedback being provided from the collectors of the transistors. Each transistor conducts in response to a different input signal polarity and, when conducting, permits a capacitor in its emitter circuit to charge to the peak amplifier output voltage. The charged capacitors bias their respective



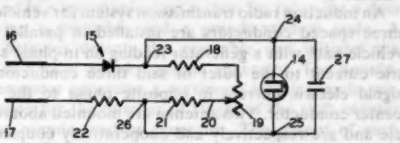
transistors off until the amplifier output voltage exceeds the stored capacitor voltage. The sum of the stored capacitor voltages is a measure of the peak-to-peak input voltage.

3,694,749

AC LINE VOLTAGE DROP INDICATOR PLUG

Joseph Woroble, 55 Morgan Place, North Arlington, N.J.

Filed Nov. 25, 1970, Ser. No. 92,567
Int. Cl. G01r *19/22*, *13/36*
U.S. Cl. 324—119 3 Claims



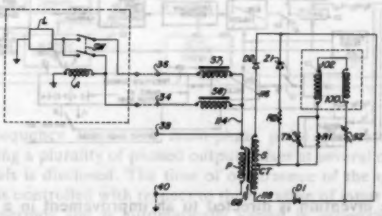
An AC line voltage-drop indicator plug comprises a small hollow body, from the rear of which project the plug prongs for insertion into a wall outlet. Within the body is contained an electrical circuit consisting of a silicon rectifier and a neon lamp blinker circuit having a variable resistor with a rotatable terminal. The front face of the body has a transparent portion through which the blinking of the neon lamp may be observed, and a rotatable shaft projecting through this face, which is connected to the variable resistor for varying the voltage. To the outer end of the shaft is connected an indicator knob intended to designate, on a scale on the front face, the minimum voltage at which the lamp begins to blink, which is calibrated to be the true voltage in the line.

3,694,750

ALTERNATOR DRIVEN TACHOMETER

Donald K. Schuhrke, Chicago, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed Oct. 29, 1970, Ser. No. 85,089
Int. Cl. G01p *3/48*
U.S. Cl. 324—173 7 Claims



The following specification describes an alternator operated tachometer utilizing an air core gauge driven by a saturable transformer having one or more choke coils selectively connected to the transformer primary for providing a relatively constant energy input to the transformer independent of alter-

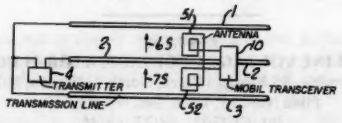
nator output voltage or the use of a battery with the alternator. A housing within the tachometer magnetically insulates the gauge and the arrangement for mounting the components provides space savings while a resistor and zener diode limit the transformer output power applied to the gauge.

3,694,751

INDUCTION RADIO TRANSMISSION SYSTEM

Kensaku Takahashi, Tokyo, and Kenichi Yoshida, Sakai, both of Japan, assignors to Japanese National Railways, Tokyo and Sumitomo Electric Industries Ltd., Osaka, Tokyo, Japan

Filed Sept. 22, 1969, Ser. No. 859,960
Claims priority, application Japan, Sept. 20, 1968, 43/68413
Int. Cl. H04b 7/00, 15/00
U.S. Cl. 325—51 1 Claim



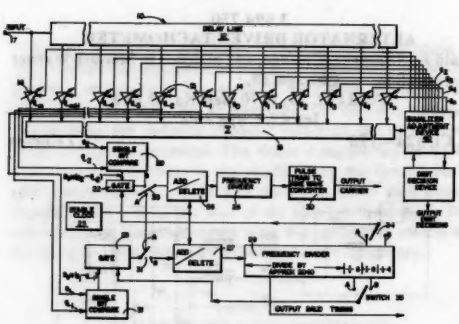
An induction radio transmission system for vehicles wherein three spaced conductors are installed in parallel along the vehicle path with a generator feeding an in-phase signal electric current to the outer of said three conductors and the signal electric current in opposite phase to the remaining center conductor. Two antenna are mounted aboard the vehicle and are respectively and cooperatively coupled with the magnetic fields of opposite phase generated by the energized conductors and are serially connected to additively combine the signal received from each antenna and cancel unwanted noise. The system may be reversed such that the antennas are energized to induce signal current flow in the conductors.

3,694,752

HIGH SPEED TRANSMISSION RECEIVER UTILIZING FINE RECEIVER TIMING AND CARRIER PHASE RECOVERY

Earl D. Gibson, Huntington Beach, Calif., assignor to North American Rockwell Corporation

Filed March 18, 1971, Ser. No. 125,660
Int. Cl. H04b 1/10
U.S. Cl. 325—323 5 Claims



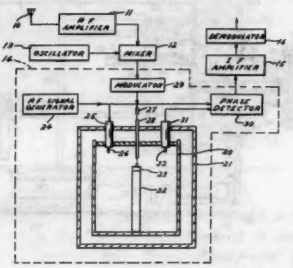
The invention is directed to an improvement in a digital data receiver of the type which utilizes an adaptive equalizer having a plurality of adjustable attenuators to remove distortion in received signals. The improvement comprises a system which utilizes the signals available at the equalizer adjustable attenuators to achieve accurate and stable carrier phase and timing control signals.

3,694,753

SYSTEM FOR IMPROVING SIGNAL-TO-NOISE RATIO OF A COMMUNICATION SIGNAL

George D. Arndt, 101 Greenbriar Dr., P.O. Box 589, Pasadena, Tex.

Continuation-in-part of Ser. No. 853,763, Aug. 28, 1969. This application Aug. 7, 1970, Ser. No. 61,895
Int. Cl. H04b 1/16
U.S. Cl. 325—373 6 Claims



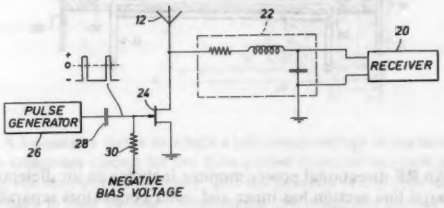
A superconductive resonant cavity is energized with radio-frequency energy. The cavity includes a tuning stub having a piece of semiconductor material mounted on the end thereof. An incoming communication signal modulates a light source optically coupled to the semiconductor by a fiber optic bundle. This varies the dielectric constant of the semiconductor which, in turn, varies the resonant frequency of the cavity. An angle modulation demodulator senses the frequency of the radio-frequency oscillations in the cavity and produces a replica of the communication signal with improved signal-to-noise ratio.

3,694,754

SUPPRESSION OF ELECTROSTATIC NOISE IN ANTENNA SYSTEMS

Otto J. Baltzer, Austin, Tex., assignor to Tracor, Inc., Austin, Tex.

Filed Dec. 28, 1970, Ser. No. 101,871
Int. Cl. H04b 1/10
U.S. Cl. 325—377 5 Claims



Antenna noise reduction apparatus and method, especially suitable for airborne service, including an antenna discharging circuit for periodically grounding the receiver antenna through a switching system at a frequency substantially higher than the carrier frequency of the radio system with which the receiver operates.

3,694,755

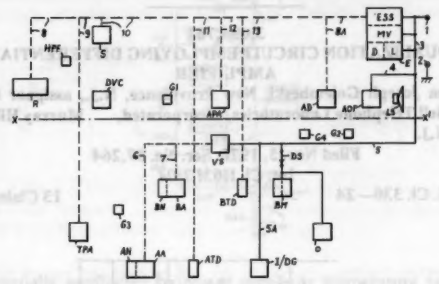
BATTERY ECONOMY APPARATUS

Michael Henry Evans Ward, Radio Works, St. Andrews Road, Cambridge, England

Filed Nov. 13, 1970, Ser. No. 89,280
Claims priority, application Great Britain, Nov. 27, 1969, 58147/69
Int. Cl. H04b 1/06
U.S. Cl. 325—392 13 Claims

A radio receiver having an economizer circuit of the type in which the current path from a supply battery to the major

parts of the receiver is periodically switched so that it is interrupted during idle periods of the receiver and having a decoder for a selective calling system, in which the delay in



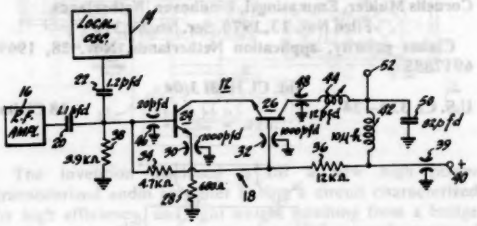
reversion to periodic switching of the economizer circuit is utilized to hold the said current path conductive during the reception of one or more tones of a selective calling sequence subsequent to the reception of a first tone.

3,694,756

MIXER CIRCUIT

David John Carlson, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 729,747, May 16, 1968, abandoned. This application May 11, 1970, Ser. No. 36,015
Int. Cl. H04b 1/06
U.S. Cl. 325—451 **25 Claims**



A transistor mixer circuit includes a first transistor interconnected in a common emitter configuration and having its collector electrode connected by circuit means to the emitter electrode of a transistor interconnected in a common base configuration. Means aRe provided for applying a locally generated signal and a radio frequency signal to the input electrode of the first transistor, and circuit means are provided for deriving intermediate frequency signals from the output electrode of the second transistor. The mixer circuit is adapted to be split into two units to permit separate and independent alignment of the radio frequency and the intermediate frequency circuitry.

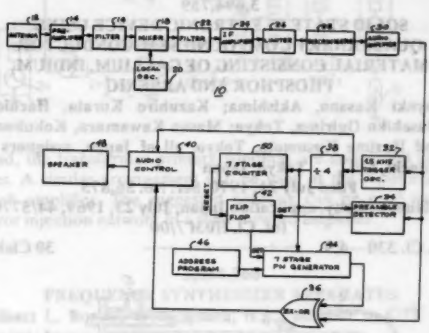
A coupling arrangement is provided for split mixer stages of the type having a first and a second mixer unit. A television cabinet has a television chassis and a television tuner mounted within the cabinet. The tuner houses an RF amplifier stage, a local oscillator stage and a first mixer unit. One end of a cable is coupled to the input of the television chassis IF signal processing circuits and the other end of the cable is connected to the second mixer unit which is housed within a conductive enclosure. The enclosure is detachably connected to the tuner to provide a circuit path between the first mixer unit housed within the tuner and the second mixer unit housed within the enclosure.

3,694,757

PSEUDO-RANDOM CODE RECOGNITION RECEIVER

Drexel W. Hanna, Jr., Warminster, Pa., assignor to Totuus Communications, Inc., Horsham, Pa.

Filed May 4, 1970, Ser. No. 34,161
Int. Cl. H04b 1/06
U.S. Cl. 325—466 **5 Claims**



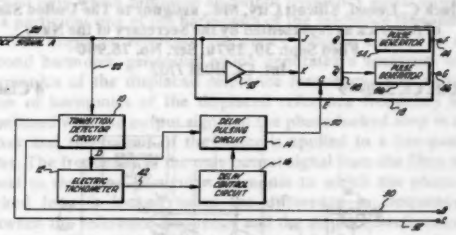
A receiver in a communication system for receiving a data signal having a preamble and a pseudo-random code. A preamble detector detects the preamble and initiates the operation of a local pseudo-random generator. The pseudo-random generator generates a maximum length pseudo-random sequence for the number of stages of the shift register used in the pseudo-random generator. The output of each stage of the shift register in the pseudo-random generator is fed to an exclusive OR gate. The pseudo-random code from the incoming data signal is compared with the pseudo-random code generated by the local pseudo-random code generator in an exclusive OR gate. The output of the exclusive OR gate is integrated in an integrating means. When the output of the integrator means exceeds a predetermined level, an alarm is energized.

3,694,758

FREQUENCY RESPONSIVE MULTI-PHASE PULSE GENERATOR

George A. Dyer, San Juan Capistrano, Calif., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed April 30, 1971, Ser. No. 138,971
Int. Cl. H03k 1/00
U.S. Cl. 328—63 **15 Claims**



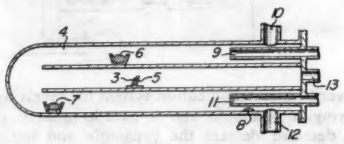
A frequency responsive multi-phase pulse generator for providing a plurality of phased output pulses at several output terminals is disclosed. The time of occurrence of the output pulses is controlled with respect to the duration of input clock signal periods and is automatically varied in proportion to changes in the input clock signal frequency. The frequency of the clock signals is detected by a transition detector circuit and an electric tachometer. A delay pulsing circuit provides delay pulses having a pulse width that is a function of the frequency of the clock signal. These delay pulses, along with the input clock signals are applied to control the operation of

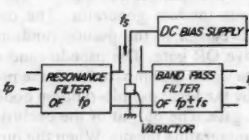
a bistable circuit which operates to provide delayed output pulses at a pair of output terminals thereof. Output pulses are also provided by the transition detector circuit. The temporal relationships of these output pulses, with respect to each other, will be proportionally varied in accordance with changes in the clock signal frequency.

3,694,759
SOLID STATE ELECTRONIC DEVICE USING QUATERNARY COMPOUND SEMICONDUCTOR MATERIAL CONSISTING OF GALLIUM, INDIUM, PHOSPHOR AND ARSENIC

Hiroyuki Kasano, Akishima; Kazuhiro Kurata, Hachioji; Masahiko Ogirima, Tokyo; Masao Kawamura, Kokubunji, and Hazime Kusumoto, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 21, 1970, Ser. No. 56,875
Claims priority, application Japan, July 23, 1969, 44/57701
Int. Cl. H03f 7/00
U.S. Cl. 330—4.9 **30 Claims**



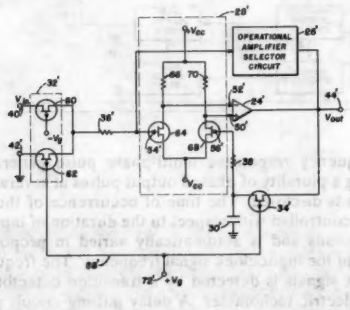


A single crystal of quaternary compound semiconductor material consisting of gallium, indium, phosphor and arsenic has excellent properties including a large band gap, high mobility, high thermal conductivity and satisfactory crystallinity. A solid state electronic device having a microwave element or light-emitting element made from this single crystal exhibits excellent performance.

3,694,760
FEEDBACK SWITCHING CIRCUIT FOR ELIMINATING ERROR SIGNALS

Jack C. Loessi, Ellicott City, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 30, 1970, Ser. No. 76,900
Int. Cl. H03f 1/02
U.S. Cl. 330—9 **4 Claims**

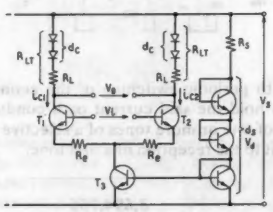


Apparatus for eliminating error currents normally prevalent when an associated operational amplifier is disconnected from its input source. A feedback arrangement comprising a field effect transistor switch in conjunction with a memory circuit reflects these error signals to the operational amplifier via a differential buffer amplifier, thereby causing said operational amplifier to null out the effects of the error currents.

3,694,761
EQUALIZATION CIRCUIT EMPLOYING DIFFERENTIAL AMPLIFIER

John Joseph Golembeski, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 5, 1970, Ser. No. 87,264
Int. Cl. H03f 3/04
U.S. Cl. 330—24 **13 Claims**

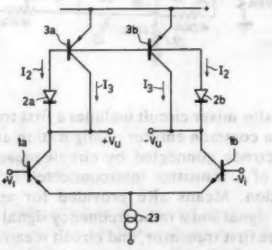


An equalizer for a communication circuit employs a transistor differential amplifier which combines the functions of amplification, gain magnitude equalization and frequency response equalization.

3,694,762
VOLTAGE AMPLIFIER

Cornelis Mulder, Emmasingel, Eindhoven, Netherlands

Filed Nov. 13, 1970, Ser. No. 89,390
Claims priority, application Netherlands, Nov. 28, 1969, 6917885
Int. Cl. H03f 3/04
U.S. Cl. 330—24 **18 Claims**



An increase voltage amplification is obtained by reduced direct current biassing of a diode connected as a collector load resistance, whilst retaining linearity.

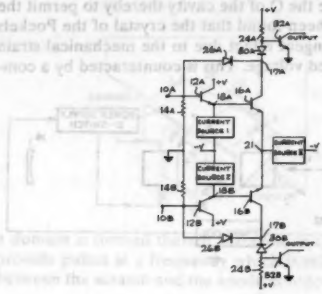
3,694,763
DIFFERENTIAL CURRENT SENSE AMPLIFIER

Thomas W. Hart, Jr., Phoenix, and Panayotis C. Economopoulos, Scottsdale, both of Ariz., assignors to Semi-Conductor Electronic Memories Incorporated, Phoenix, Ariz.

Filed July 7, 1970, Ser. No. 52,972
Int. Cl. H03f 3/68
U.S. Cl. 330—30 D **7 Claims**

A differential amplifier is provided which, by the addition of diodes and transistors isolates input from output for common

mode while enabling a low differential impedance. A constant current source is also provided for the amplifier which is substantially unaffected by power supply or temperature variations.

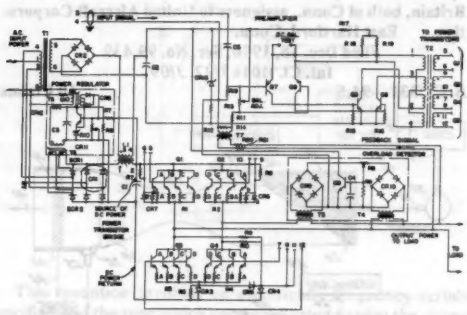


3,694,764

HIGH POWER AUDIO AMPLIFIER SYSTEM

Benjamin Barron, 1335-143rd Street, Whitestone, N.Y.

Filed Feb. 3, 1970, Ser. No. 8,230
Int. Cl. H03f 3/00
U.S. Cl. 330—146 12 Claims



The invention disclosed is for a new high power transistorized audio amplifier having a circuit characterized by high efficiency, and light weight resulting from a bridge configuration of power transistors, and a uniquely arranged A.C./D.C. power supply system; low distortion and stable operation over wide temperature variations resulting from a stabilized current driver arrangement which forces opposite arms of the bridge configuration to function identically with "on" bias voltages that are created through uniquely arranged sets of diodes. This arrangement also allows the amplifier units to be connected in parallel directly with the load currents dividing equally between them, automatically.

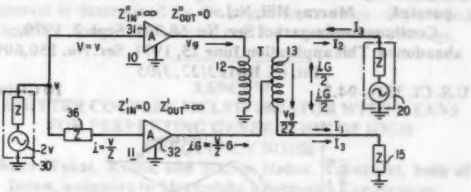
3,694,765

SIGNAL COUPLING CIRCUIT

Henry Richard Beurrier, Old Chester Road, Far Hills, Chester Township, Morris County, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray ill, N.J.

Filed Feb. 8, 1971, Ser. No. 113,213
Int. Cl. H03f 1/00
U.S. Cl. 330—165 9 Claims

This application describes a coupling circuit for coupling one or more signal sources to a common load without disturbing any of the coupled circuits. Each coupling circuit comprises a pair of amplifiers and a two-winding transformer. One amplifier, whose output impedance is much less than the load impedance, is connected to the transformer secondary winding. The other amplifier, whose output impedance is much larger than the load impedance, is connected to a center-tap on the transformer primary winding. The load and a matching impedance are connected to opposite ends of the primary winding. When more than one source is to be coupled to the load, the transformer primary windings are connected in series. A similar arrangement can be used at the input end of each amplifier. The suggested network can be used as the error injection network of a feed-forward amplifier.

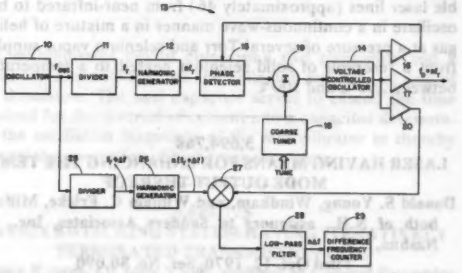


3,694,766

FREQUENCY SYNTHESIZER APPARATUS

Gilbert L. Boelke, West Seneca, N.Y., assignor to GTE Sylvania Incorporated

Filed Aug. 30, 1971, Ser. No. 175,839
Int. Cl. H03b 3/04, 21/00
U.S. Cl. 331—11 9 Claims



Harmonic generator type of frequency synthesizer employing a reference frequency signal equal to the spacing between adjacent channels and a displaced reference frequency signal which differs from the reference frequency by a few hertz. The reference frequency signal is applied to a first harmonic generator which generates a spectrum of harmonics of the reference frequency. The spectrum is applied to a phase-locked loop which produces an output frequency signal equal to a particular one of the harmonics of the reference frequency. The displaced reference frequency signal is applied to a second harmonic generator which generates a spectrum of harmonics of the displaced reference frequency. The spectrum of harmonics of the displaced reference frequency is combined with the output signal of the phase-locked loop in a mixer and the output of the mixer is applied to a low-pass filter. The frequency of the only output signal from the filter is equal to the same particular harmonic to which the phase-locked loop is locked times the difference in frequency between the reference frequency and the displaced reference frequency. Since the difference between the frequencies is a known, fixed value, the signal from the filter is thus a precise measure of the particular harmonic of the reference frequency being produced by the phase-locked loop.

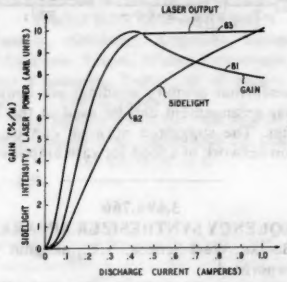
The output frequency of the filter may be counted and compared with a preset count representing the value of a predetermined harmonic of the reference frequency to which it is desired to tune the phase-locked loop. The difference between the counts is employed to generate a voltage signal which is coupled to the phase-locked loop to change the tuning of the phase-locked loop to another harmonic of the reference frequency.

3,694,767

BROAD SPECTRUM SELENIUM ION LASER

Marvin Bertrand Klein, Long Branch, and William Thomas Silfvast, Holmdel Township, Monmouth County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 68,991, Sept. 2, 1970, abandoned. This application June 25, 1971, Ser. No. 156,609
Int. Cl. H01s 3/22, 3/05
U.S. Cl. 331—94.5 10 Claims



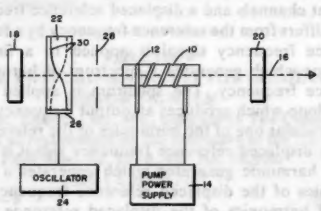
There is disclosed the discovery of a selenium ion laser employing a relatively low current, cataphoresis ion-pumped discharge tube in which a broad spectrum of infrared and visible laser lines (approximately 46) from near-infrared to blue oscillate in a continuous-wave manner in a mixture of helium gas at a pressure of several Torr and selenium vapor supplied from a reservoir of solid selenium heated to a temperature between 200°C and 300°C.

3,694,768

LASER HAVING MEANS FOR ENHANCING THE TEM MODE OUTPUT THEREOF

Donald S. Young, Windham, and William C. Fricke, Milford, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Oct. 12, 1970, Ser. No. 80,090
Int. Cl. H01s 3/10
U.S. Cl. 331—94.5 9 Claims



A transverse acoustic wave is applied to a fused silica cell disposed within a laser cavity to thereby change the optical path length of the laser cavity. TEM_{00} mode efficiency is improved by increasing the number of atoms in the active laser medium which contribute to the axial mode.

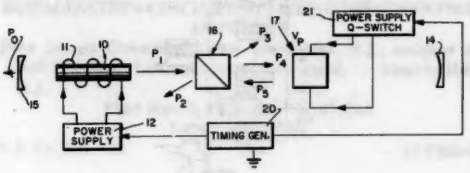
3,694,769

LOW-LOSS LASER Q-SWITCH

William R. Hook, Los Angeles; Ronald P. Hilberg, Redondo Beach, and Roland H. Dishington, Pacific Palisades, all of Calif., assignors to TRW, Inc., Redondo Beach, Calif.

Filed May 17, 1971, Ser. No. 143,906
Int. Cl. H01s 3/11
U.S. Cl. 331—94.5 4 Claims

A high-power Q-switched laser is provided having a low loss. One common type of Q-switched laser conventionally includes an electro-optical element for altering the polarization of the light wave in the cavity of the laser. Preferably, the element is a Pockels cell. A voltage applied to the cell is changed suddenly to increase the Q of the cavity thereby to permit the laser to lase. It has been found that the crystal of the Pockels cell suffers a birefringent effect due to the mechanical strain caused by the applied voltage. This is counteracted by a compensating voltage applied to the cell so that the loss of the laser defined as the ratio of light power deflected out of the cavity to the light power approaching the light polarizer in the cavity becomes substantially zero at a time when the laser lases. The voltage which must be applied to a Pockels cell containing lithium niobate is positive while a negative voltage is required for a crystal of potassium dideuterium phosphate.

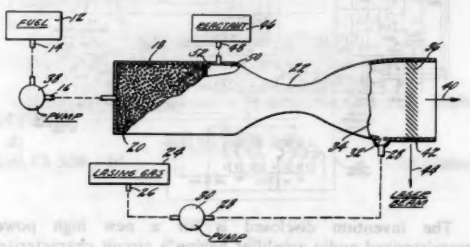


3,694,770

LIQUID FUEL GAS DYNAMIC MIXING LASER

Wayne G. Burwell, Wethersfield, and Charles Oickle, Jr., New Britain, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 18, 1970, Ser. No. 99,439
Int. Cl. H01s 3/22, 3/09
U.S. Cl. 331—94.5 10 Claims



A liquid fuel is admitted to a catalytic chemical reactor and decomposed to provide high temperature, vibrationally excited nitrogen. The nitrogen is aerodynamically expanded to a condition of low static temperature and carbon dioxide is then admixed. Vibrational energy is transferred from the nitrogen to the carbon dioxide causing a population inversion in the carbon dioxide which emits laser energy in an optical cavity.

3,694,771

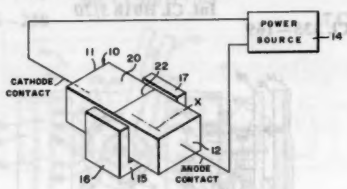
MAGNETICALLY ACTUATED TUNING METHOD FOR GUNN OSCILLATORS

Barry H. Sacks, Berkeley, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Aug. 30, 1971, Ser. No. 175,881
Int. Cl. H03b 7/00
U.S. Cl. 331—107 G 16 Claims

A tunable microwave generator based on the Gunn effect is disclosed. The generator includes a semiconductor material which exhibits the Gunn effect when current flows therethrough between anode and cathode end contacts. The material has a plurality of sides each with a scratch at a different distance from the anode contact. A magnetic field is produced by a magnet placed about the semiconductor field.

The Lorentz force produced as a function of the current flow and the magnetic field drive the electrons to the surface of one of the sides to cause nucleation to occur at the scratch. When



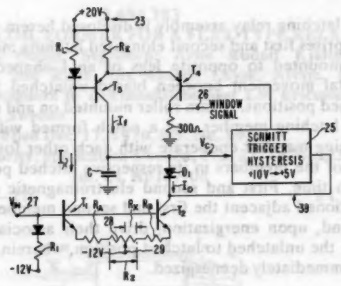
a domain is formed thereat it travels to the anode contact to provide pulses at a frequency which is related to the distance between the scratch and the anode contact.

3,694,772

VOLTAGE CONTROL SAWTOOTH OSCILLATOR WITH FLYBACK TIME INDEPENDENT OF FREQUENCY

Frank J. Sordello, San Jose, Calif., assignor to Information Storage Systems, Inc., Cupertino, Calif.

Filed April 12, 1971, Ser. No. 133,219
Int. Cl. H03b *3/04*; H03k *4/50*
U.S. Cl. 331—111 **8 Claims**



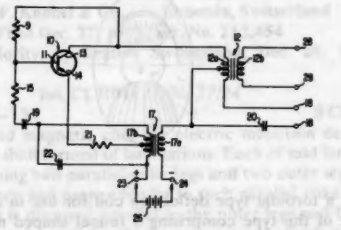
This invention involves an electrically frequency-variable oscillator of the type which can be adjusted to vary the characteristics of both the sawtooth wave and rectangular wave generated.

3,694,773

TONE BURST GENERATOR

Richard E. Leitner, 8853 West Florida, Denver, Colo.

Continuation of Ser. No. 823,913, May 12, 1969, abandoned. This application Jan. 20, 1971, Ser. No. 107,929
Int. Cl. H03k *3/30*
U.S. Cl. 331—112 **6 Claims**



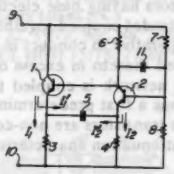
A tone burst generator that produces a tone burst at predetermined intervals and operates at low voltage and current levels is described. The tone burst generator comprises a transistorized feedback oscillator circuit that includes a transformer having it's primary and secondary windings connected in series in the feedback path. The frequency of the tone burst is determined by the inductance value of the transformer and the capacitance value of a first capacitor connected in parallel with the secondary winding of the transformer. The tone burst interval is determined by the capacitance value of a second capacitor connected in series with the transformer windings.

3,694,774

EMITTER COUPLED MULTIVIBRATOR WITH MEANS FOR PREVENTING GENERATION OF HIGH FREQUENCY NOISE

Shuzo Wakai, Kyoto, and Mitsuo Nabae, Takatsuki, both of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed April 23, 1971, Ser. No. 136,787
Int. Cl. H03k *3/282*
U.S. Cl. 331—113 R **1 Claim**



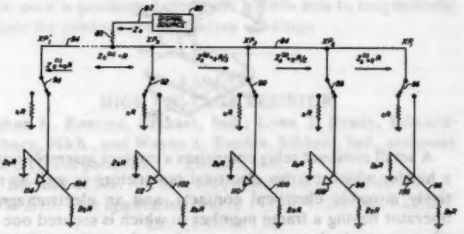
A multivibrator circuit comprising two transistors and a capacitor connected across the collector and base of one of the transistors. The said capacitor serves to extend the time required for the reversal of current into a capacitor determining the oscillation frequency of the multivibrator to thereby prevent the generation of high frequency noise.

3,694,775

MATRIX SWITCHING SYSTEM HAVING ITERATIVELY TERMINATED TRANSMISSION LINE

Stanley Rogers, La Jolla, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed March 29, 1971, Ser. No. 129,087
Int. Cl. H01p *1/10*
U.S. Cl. 333—7 **6 Claims**



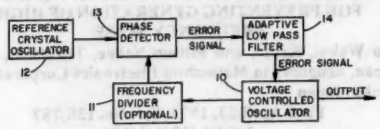
An iteratively terminated or "tapered" transmission line is disclosed which is suitable for high frequency matrix switch application. The transmission lines interconnecting successive terminating impedances each have a characteristic impedance equal to the impedance in which it is effectively terminated. This arrangement allows the terminating impedances to be irregularly spaced along the tapered line and prevents signal reflections from occurring at any termination point, improving the stability of response when frequency changes and when either the number or the configuration of crosspoint closures changes.

3,694,776

ADAPTIVE FILTER WHEREIN OPPOSITE CONDUCTIVITY TRANSISTORS ARE OPERATIVE IN RESPONSE TO SIGNALS IN EXCESS OF PREDETERMINED AMPLITUDE

Donald L. Linder, Elmhurst, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 14, 1970, Ser. No. 97,741
Int. Cl. H03g 5/16; H03h 7/10
U.S. Cl. 333—17 8 Claims



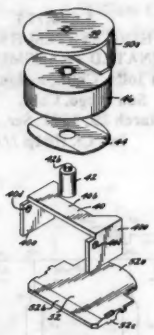
An adaptive filter circuit for filtering and attenuating signals coupled thereto which includes first and second opposite conductivity transistors having base electrodes coupled together and emitter electrodes coupled together. The first and second transistors are operative to conduct in response to portions of the signal coupled thereto in excess of a predetermined amplitude. A filter network is coupled to the first and second transistors and has a first predetermined attenuation characteristic when the transistors are non-conductive and a second predetermined attenuation characteristic when the transistors are conductive.

3,694,777

COMPACT ELECTROMAGNETIC RELAY

Michael Muller, Newport, Calif., assignor to Babcock Electronics Corporation, Costa Mesa, Calif.

Filed May 14, 1971, Ser. No. 143,408
Int. Cl. H01h 51/06
U.S. Cl. 335—128 10 Claims



A small compact relay comprises a contact assembly having a header which carries electrical connectors as well as relatively movable electrical contacts, and an electromagnetic operator having a frame member to which is secured one end of a core and whereon is mounted an electromagnetic winding, there being another frame member fixed to the other end of the core and having a pole portion extending adjacent the winding. An armature is pivotally mounted on the first mentioned frame member to provide an electromagnetic air gap with said pole member, and a return spring is mounted relative to said first mentioned frame to urge said armature in a given position relative to said pole member.

3,694,778

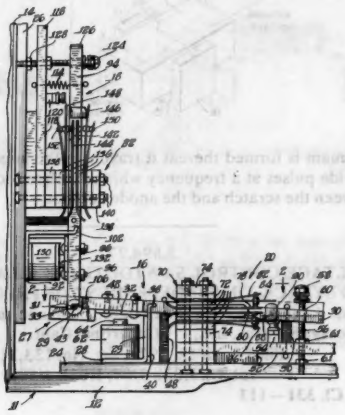
Patent Not Issued For This Number

3,694,779

LATCHING RELAY ASSEMBLY

Mitchell F. Komar, 2334 North Monitor Ave., Chicago, Ill.

Filed Oct. 2, 1970, Ser. No. 77,580
Int. Cl. H01h 3/20
U.S. Cl. 335—169 9 Claims



A latching relay assembly is disclosed herein and generally comprises first and second elongated latching members which are mounted to opposite legs of an L-shaped bracket for pivotal movement between biased unlatched positions and latched positions. A cam roller mounted on and carried by the first latching member and a notch formed with the second latching member cooperate with each other for locking only one of the members in its respective latched position at any given time. First and second electromagnetic solenoids are positioned adjacent the first and second members respectively, and, upon energization, drive their associated members from the unlatched to latched position, wherein the solenoids are immediately deenergized.

3,694,780

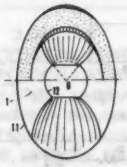
Patent Not Issued For This Number

3,694,781

TOROIDAL TYPE DEFLECTION COILS FOR CATHODE RAY TUBES

Eiji Sawada, Tokyo, Japan, assignor to Denki Onkyo Company Limited, Tokyo, Japan

Filed Jan. 28, 1971, Ser. No. 110,724
Claims priority, application Japan, Jan. 30, 1970, 45/8193
Int. Cl. H01f 7/00
U.S. Cl. 335—210 2 Claims



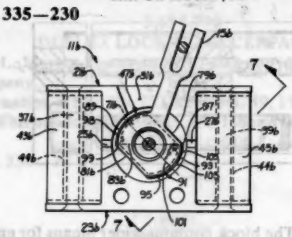
In a toroidal type deflection coil for use in a cathode ray tube of the type comprising a funnel shaped magnetic core and a coil wound about the core to create a magnetic field having different distributions at the fore and rear edges of the core, portions of the peripheries of the fore and rear edges of the core on which the coil is wound take the form of curves of different radii of curvature.

3,694,782

ROTARY ACTUATOR

Ralph D. Ray, 834 Production Place, Newport Beach, Calif.

Filed Nov. 20, 1970, Ser. No. 91,359
Int. Cl. H01f 7/08
U.S. Cl. 335—230 7 Claims



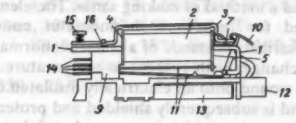
A rotary actuator comprising a rotor including a permanent magnet and a stator of magnetic material substantially surrounding the rotor. A force field is set up in the magnetic material of the stator, and the permanent magnet of the rotor adds to this field to apply magnetic forces to the rotor tending to rotate the latter. The rotary actuator has various features which contribute to a relatively long stroke and high torque output.

3,694,783

RELAY COIL FORMER FOR A FLAT-TYPE RELAY

Rolf Henrik Collin, Segeltorp; Arne Rudolf Kjallstrom, Hagersten, and Rune Nils Anders Thysk, Alvsjo, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Dec. 17, 1970, Ser. No. 99,134
Claims priority, application Sweden, Feb. 23, 1970, 2238/70
Int. Cl. H01f 7/08
U.S. Cl. 335—276 2 Claims



In order to simplify the production of electromagnetic flat-type relays a separately manufactured relay coil former is slotted along one edge so that the flat magnet core can be inserted from the side and snapped into its position in the coil former.

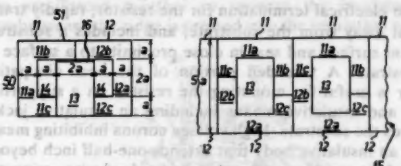
3,694,784

LAMINATED MAGNETIC CORE FOR INDUCTION DEVICES AND LAMINATIONS FOR FORMING SUCH MAGNETIC CORE

Ernst Meili, Zurich, Switzerland, assignor to Elektro-Apparatebau F. Knobel & Co., Ennenda, Switzerland

Filed Dec. 27, 1971, Ser. No. 212,454
Claims priority, application Switzerland, Dec. 28, 1970, 19231/70
Int. Cl. H01f 21/06, 27/24
U.S. Cl. 336—134 8 Claims

A laminated magnetic core for electric induction devices comprising a shell formed of laminations. Each of said laminations comprising two parallel yoke legs and two outer legs arranged between and perpendicular to such parallel yoke legs. A central leg is disposed parallel to the outer legs and forms with one of said parallel yoke legs an air gap. Each of the laminations of the shell embodying similar U-shaped lamination elements comprising a respective outer leg and unequal length yoke leg sections protruding from the ends of such respective outer legs. These lamination elements bear against one another at the end faces of their longer yoke leg sections to form a shell lamination for the magnetic core. Further, such



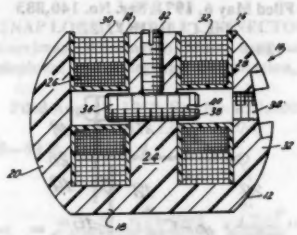
lamination elements bear at the end faces of their shorter yoke leg sections against a central web forming the central leg and arranged between such shorter yoke leg sections.

3,694,785

TEMPERATURE COMPENSATING DIFFERENTIAL TRANSFORMER

Jacob Chass, Rego Park, N.Y., assignor to Pickering & Co. Inc., Plainview, Long Island, N.Y.

Filed Feb. 22, 1972, Ser. No. 228,078
Int. Cl. H01f 15/16, 21/06
U.S. Cl. 336—136 5 Claims



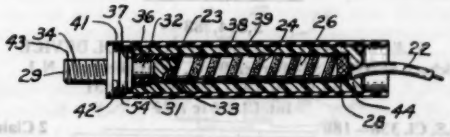
A temperature compensating differential transformer is provided including a yoke of magnetic material having two cavities therein. First and second bobbins, each carrying a primary and secondary winding thereabout, are provided in the cavities in axial alignment. The primary winding is formed of two coils connected in parallel. One of the primary coils is formed, in part, of a wire having an extremely low temperature coefficient of resistance. The other primary winding coil and the remainder of the first primary winding coil is formed of the same material as the secondary winding coils. A magnetic core is positioned along the bobbin axis to magnetically couple the primary and secondary windings.

3,694,786

HIGH VOLTAGE RESISTOR

Arthur L. Rosema, Elkhart, Ind.; Lynn J. Brady, Edwardsburg, Mich., and Wayne A. Barden, Elkhart, Ind., assignors to CTS Corporation, Elkhart, Ind.

Division of Ser. No. 809,655, March 24, 1971, Pat. No. 3,579,819. This application March 11, 1971, Ser. No. 123,267
Int. Cl. H01c 1/02
U.S. Cl. 338—256 5 Claims



High voltage circuit arrangement includes a load connected to a power supply of at least 20,000 volts, and a single discrete

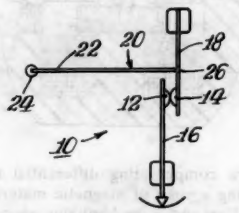
high voltage electrical resistor connected to the power supply and load. The high voltage resistor comprises a spiral resistive path supported on a ceramic substrate which provides a uniform and continuous heat dissipation path between the ends of the resistor. A heat dissipating mounting member forms an electrical termination for the resistor, rapidly transfers heat away from the substrate, and includes a substrate alignment surface and seat in close proximity to a surface of the substrate. A threaded portion of the heat dissipating member is useful for mounting the resistor on a supporting surface and insulative means including an insulative jacket surrounds the substrate. High voltage corona inhibiting means include an insulative body that extends one-half inch beyond an end of the resistive path and embeds a lead wire connected to the resistive path. The resistive path is a cermet film type material having resistivity of 5 megohms per square, a voltage coefficient of less than 400 parts per million per volt per square, and a voltage withstanding ability of 3,000 volts per inch of resistive path. The resistive path itself comprises an intersticed mass of inert particles and a conductive phase forming an interstitial mass within the intersticed mass.

3,694,787

TIME PROPORTIONING ELECTRICAL CONTROL DEVICE

Robert Eugene Emmons, Goshen, Ind., assignor to Penn Controls, Inc., Oak Brook, Ill.

Filed May 6, 1971, Ser. No. 140,883
Int. Cl. H01h 71/22
U.S. Cl. 337—124 **10 Claims**



An electrical control device designed to produce a variable electrical signal proportional to the degree of change of an environmental parameter over a preselected band width. A pair of electrical contacts in a normally spaced apart relation are connected in series between a signal source and the element to be controlled so that the signal is allowed to be transmitted to the element upon the closing of the contacts. This invention operates by using a high frequency interruption of a signal current by means of a pair of opening and closing contacts. One contact is positioned relative to the other by means of an environmental sensing device responding to changes in a particular environmental parameter. The second contact is mechanically coupled to the current responsive device for effecting movement of the second contact away from the first contact when energized to provide a continuous interruption of the signal, where the ratio of the current responsive device's on-time to off-time is proportional to the degree of change of the environmental parameter within the preselected band width.

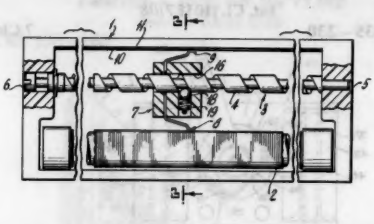
3,694,788

ELECTRICAL COMPONENT CONTROL DEVICE

Richard Perrisini, 534 Bergen Blvd., Palasades Park, N.J.

Filed July 6, 1971, Ser. No. 159,631
Int. Cl. H01c 1/12
U.S. Cl. 338—180 **2 Claims**

An electrical device having a parameter made variable by a control assembly which includes a shaft having a helix-like thread along its longitudinal length and a wiper block having a bore therethrough for receiving the shaft. The block also includes a second smaller bore orthoganal to the first bore and contains therein a small ball held under tension and disposed to ride along the threaded portion of shaft in response to the



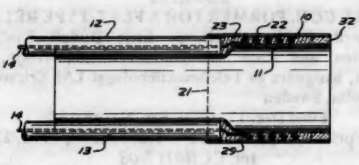
rotation thereof. The block contains wiper means for engaging the variable parameter to provide continuity between said parameter and external circuitry.

3,694,789

ELECTRICAL RESISTANCE ELEMENT

William L. Brown, Minneapolis, Minn., assignor to Rosemount Engineering Company, Minneapolis, Minn.

Division of Ser. No. 649,186, June 27, 1967, Pat. No. 3,513,541. This application Feb. 9, 1970, Ser. No. 14,693
Int. Cl. H01c 1/02
U.S. Cl. 338—238 **3 Claims**



This disclosure teaches a new electrical resistance element construction and a method of making same. The elements are commonly used for resistance thermometer construction wherein the electrical resistance of a material, normally a fine metallic wire, changes with respect to temperature. The resistance wire is wound onto an electrically insulated or insulative mandrel and is subsequently shielded and protected with an outer shell. A cavity (which is purposely left between the mandrel and the outer shell) is sealed at one end and then filled with a liquid, normally very pure water. If necessary, the unit is centrifuged to insure that the water fills all of the air pockets in the cavity. A container is then placed around the outer shell and a plug (if the inner mandrel is hollow) inserted inside the mandrel thus extending and enlarging the cavity beyond the extremes of the unit. The extended cavity is then filled with a very finely powdered dielectric material and water slurry. The unit is again centrifuged and the heavier dielectric material (normally alumina) will replace the water originally centrifuged into the cavity between the mandrel and the outer shell and will be compacted tightly around the resistance wire. The unit is then removed from the centrifuge and dried in an oven to evaporate any of the liquid (water) which may still be present in the unit. The open end of the cavity is then sealed and the element is ready for use. Suitable lead wires are attached prior to centrifuging and means are provided for maintaining the resistance wire wrapped around the mandrel in position so that it does not electrically short out to the mandrel or the adjacent winds of the wire do not short to each other during centrifuging. As shown, one way of doing so is to affix portions of the wire to the mandrel, or the mandrel can contain grooves which will hold the wire from longitudinal displacement during centrifuging.

An alternate approach, utilizing the above described centrifuging technique is also employed. That is, a resistance element of any volume is mounted within an outer shell of any volume slightly larger than the element volume. The remain-

ing cavity is then filled with material by centrifuging as previously described thus producing a completely supported and contained resistive element.

3,694,790

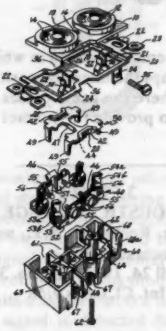
DUPLEX LOCKING RECEPTACLE

Robert L. Martin, Cranston, R.I., assignor to General Electric Company

Continuation of Ser. No. 771,829, Oct. 30, 1968, abandoned. This application Feb. 25, 1971, Ser. No. 118,955

Int. Cl. H01r 3/06

U.S. Cl. 339—14 R **7 Claims**



A duplex grounded convenience outlet is provided adapted to receive power blades in twist lock relationship. Simplicity of connector construction and disposition is achieved through use of symmetrical connector strips and feed through mounting bracket with mounting of grounding contacts thereon.

3,694,791

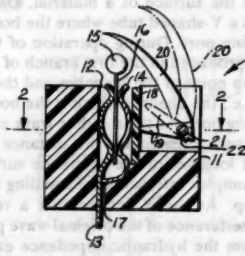
LOCKING TRANSISTOR SOCKET

Joe F. Urban, 3000-N. 43rd St., Waco, Tex.

Filed Jan. 11, 1971, Ser. No. 105,259

Int. Cl. H01r 13/54

U.S. Cl. 339—75 T **1 Claim**



A socket for locking transistors into electronic circuits. This socket includes a pivotable lever which when pivoted towards the transistor, will urge the socket closed on the transistor's connectors, the lever also when in closed position will prevent the removal of the transistor until the lever is released, thus preventing damage to the transistor.

3,694,792

ELECTRICAL TERMINAL CLAMP

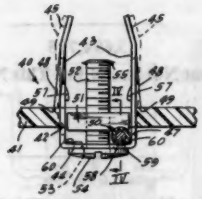
William H. Wallo, Chicago, Ill., assignor to Wall-Able Manufacturing Corporation, Chicago, Ill.

Filed Jan. 13, 1971, Ser. No. 106,050

Int. Cl. H01r 9/08

U.S. Cl. 339—97 R **11 Claims**

An electrical terminal clamp has opposed clamping members at least one of which is electrically conductive and between which is adapted to be received an electrical wire covered with pliable insulation, the electrically conductive member having thereon a rigid contact ridge across which the insulated wire is received such that when the clamping members are forced together to squeeze the insulated wire therebetween, the ridge is pressed into the insulation to effect



an electrical contact with the wire. The contact ridge feature may be embodied in a generally U-shaped electrical connector equipped to be snapped into position in a prepared aperture in a terminal board, with the clamping members comprising a base web and a nut threaded on a screw engaged on the web, the ridge being pressed in said web so that the nut will be drawn theretoward by tightening the screw.

3,694,793

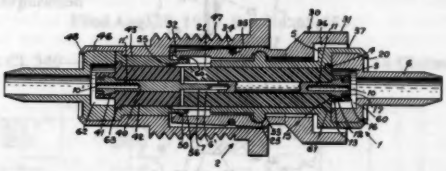
SNAP LOCK COAXIAL CONNECTOR

Carl W. Concelman, Wilmington, Mass., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Aug. 18, 1969, Ser. No. 850,800

Int. Cl. H01r 13/54, 17/04

U.S. Cl. 339—91 P **3 Claims**



This invention is for a quick connect and disconnect coaxial coupling. The connector plug portion has a split outer shell latch type of coupling that allows for locking upon direct engagement, and releases when two tabs are pressed inwardly. The connector also has a new method of contact captivation comprising contacts having barbs that allow for easy insertion into a resilient insulation material and tend to retain their axial position when subjected to an axial withdrawal force.

3,694,794

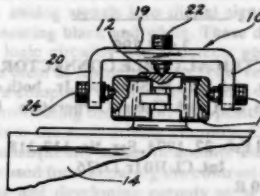
BATTERY TERMINAL BRIDGE

Louis T. Hein, 3515 4-Mile Road, Racine, Wis.

Filed Aug. 16, 1971, Ser. No. 172,142

Int. Cl. H01r 11/20

U.S. Cl. 339—95 B **4 Claims**



A means to be mounted over the cable terminal clamp of a storage battery, that will assure uninterrupted flow of current

through the ignition system of an automobile, in instances when corrosion has taken place between the post and the terminal clamp. It comprises a bridge having contact means that positively engage, and is embedded into, the terminal post and the terminal clamp; thus assuring continuity of current through the system, by bridging the corrosive condition.

3,694,795

Patent Not Issued For This Number

3,694,796

Patent Not Issued For This Number

3,694,797

Patent Not Issued For This Number

3,694,798

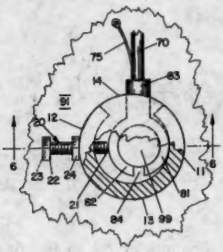
CLAMP FOR ENSURING LATERAL CONTACT BETWEEN AXIAL-POST AND LATERALLY-CONSTRICTABLE CONNECTOR

Robert A. Julian, 1608 Brenda Drive, Bellevue, Nebr.

Filed Dec. 7, 1970, Ser. No. 95,530

Int. Cl. H01r 11/26

U.S. Cl. 339—224 **4 Claims**



There is provided a removable tightener clamp for ensuring lateral contact between an axial-post and a laterally constrictable connector (such as a dual-prongs connector on a current-carrying cable). For chemical action type batteries, such as in the automobile battery environmental situation, each of the two battery terminal-posts and their respective dual-prongs connectors gradually chemically erode to such dimensional extent that it is impossible to maintain an electrically conductive relationship therebetween. The novel tightener clamp herein is adapted to enclose therewithin the chemically eroded dual-prongs connector and its axial terminal post and to apply lateral pressure against one of the connector prongs whereby electrically conductive relationship between the terminal-post and the connector is effected and maintained.

3,694,799

ELECTRICAL CABLE CONNECTOR

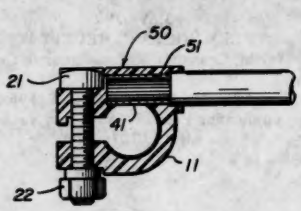
John K. Shannon, and John K. Shannon, Jr., both of Kenosha, Wis., assignors to Quick-Cable Corporation, Racine, Wis.

Filed Feb. 22, 1971, Ser. No. 117,318

Int. Cl. H01r 11/26

U.S. Cl. 339—230 R **2 Claims**

An electrical cable connector is disclosed which in one portion receives a stripped cable end in a barrel-shaped receiving element. The body portion of the cable connector has a pair of opposed jaws which, when squeezed together by means of a bolt or similar construction, simultaneously locks the cable in position while the jaws secure the member to a terminal or



other cable. Embodiments are shown in which a thin wall section tangentially overlaps the intended position of the terminal or other cable, and where the cable passes through a tangentially opening recess to provide for contact with the two electrical elements.

3,694,800

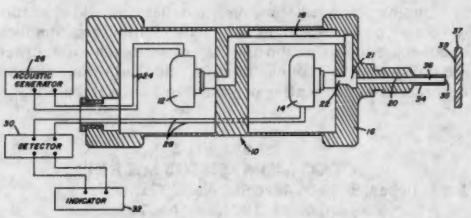
ACOUSTICAL GAUGE

Lee Fitzpatrick Frank, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed April 24, 1970, Ser. No. 31,708

Int. Cl. G01s 9/68

U.S. Cl. 340—1 R **12 Claims**



An acoustical gauge is disclosed for measuring the distance between an acoustic wave transmitting and receiving or sensing port and the surface of a material. One device disclosed comprises a Y-shaped tube where the bottom of the Y ends in the sensing port. During operation of the gauge, an acoustic wave is produced in the first branch of the Y, travels to the intersection point of the branches and then propagates down the stem, i.e., the channel which is the bottom of the Y and out the sensing port. As the standing wave encounters the hydraulic impedance created by the distance between the sensing port and location of the reference surface near the sensing port, a complex interaction of standing and travelling waves are set up. At the Y intersection a resultant wave formed by the interference of the original wave produced with the feedback from the hydraulic impedance encountered at the sensing port, is investigated and measured for phase or amplitude variation. These measurements can be calibrated in terms of distance between the sending port and the reference surface.

3,694,801

Patent Not Issued For This Number

3,694,802

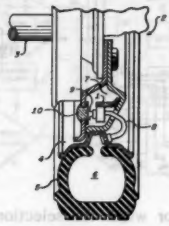
Patent Not Issued For This Number

3,694,803

VEHICLE TIRE PRESSURE MONITOR SYSTEM

Harry F. Strenglein, Clearwater, Fla., assignor to Sperry Rand Corporation

Filed July 28, 1971, Ser. No. 166,892
Int. Cl. B60c 23/02
U.S. Cl. 340—58 19 Claims



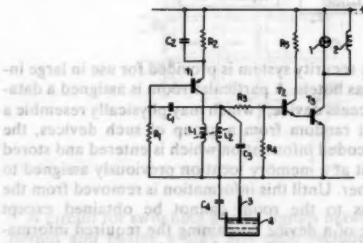
The condition monitor provides information as to the state of a monitored dual state device having, for example, possible satisfactory and unsatisfactory conditions. Use is made of a passive transducer element powered by a space-transmitted radio frequency signal of fundamental carrier frequency. In the unsatisfactory condition of the monitored device, the passive transducer emits a signal that is a harmonic of the carrier frequency, which signal is detected for the operation of a suitable alarm or remedial control. In the normal or satisfactory condition of the monitored device, the carrier frequency energy causes the passive transducer to inhibit production of second harmonic energy.

3,694,804

COOLANT LEVEL DETECTOR FOR ENGINE COOLING SYSTEM

Frederick Norman Hill, Anglesey, North Wales, assignor to Thomas Electronics Limited, Marple, Cheshire, England

Filed June 11, 1970, Ser. No. 45,530
Claims priority, application Great Britain, June 11, 1969, 29,069/69
Int. Cl. B60g 1/00; G01f 23/24
U.S. Cl. 340—59 5 Claims



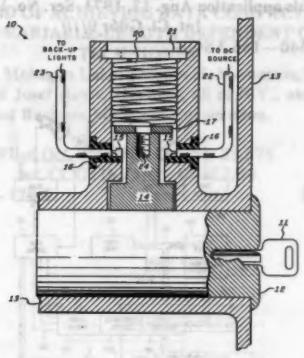
In a liquid level detector for an engine cooling system an oscillator is arranged to apply a continuous output signal to a probe located in a liquid coolant reservoir presenting to the oscillator a variable electrical impedance according to the liquid level therein and a relaxation oscillator is operative in response to signals from said oscillator and arranged to actuate an indicator device giving intermittent visual and/or audible warning when the surface of the liquid coolant falls to below a predetermined level; a clamp circuit is arranged to inhibit operation of the relaxation oscillator when the surface of the liquid coolant is at or above the predetermined level and thereby improve the noise immunity of the detector.

3,694,805

STOLEN VEHICLE INDICATING DEVICE

Robert L. Cashman, Mineola, N.Y., assignor to Sperry Rand Corporation

Filed July 14, 1971, Ser. No. 162,361
Int. Cl. B60r 25/10
U.S. Cl. 340—64 7 Claims



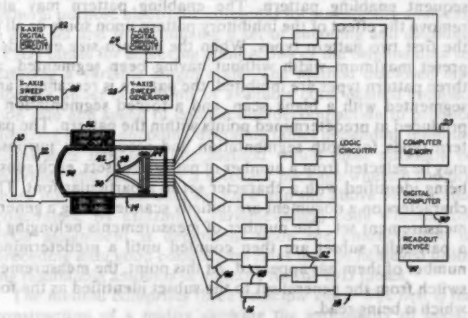
A vehicle ignition lock which includes a spring actuated contact for completing an electrical circuit upon removal of the ignition lock cylinder that illuminates the backup lights of the vehicle to provide an indication that the vehicle has been stolen.

3,694,806

CHARACTER RECOGNITION SYSTEM

Morris D. Freedman, Southfield, Mich., assignor to The Bendix Corporation

Filed Aug. 20, 1970, Ser. No. 65,555
Int. Cl. G06k 9/12
U.S. Cl. 340—146.3 F 14 Claims



A character recognition system utilizing an image dissector device to first develop an electronic image of a character and then to scan and to dissect the character into elemental areas. From this scan and dissect operation multiple analog signals are developed which simultaneously correspond to several of the elemental areas. Threshold circuits serve as quantizers and digitize the analog signals into digital signals with discrete levels representing black and white. These digital signals are supplied to logic circuitry which detects geometric features and encodes them as feature vectors. This vector information is stored in a computer memory along with the positional information for locating the vector. The positional information is derived from the scan driving circuitry. Classification and readout is subsequently made. In another embodiment, comparators are used for comparing the contrast between the elemental areas and developing outputs to be supplied to the logic circuitry.

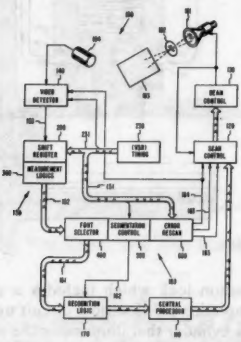
3,694,807
CHARACTER SEGMENTATION USING PATTERN MEASUREMENTS, ERROR RESCAN AND ADAPTIVE FONT DETERMINATION

Milton F. Bond, and John F. Shatford, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 889,409, Dec. 31, 1969, abandoned. This application Aug. 12, 1971, Ser. No. 171,326

Int. Cl. G06r 9/10

U.S. Cl. 340—146.3 SG **25 Claims**



Several types of input pattern measurements are gated together to determine the point at which adjacent characters will be separated by a segmentation signal. One type of pattern is effective to segment the characters unless an inhibitory pattern has also been received. The second pattern type will segment the characters only after an initializing pattern has been received, but only if an inhibitory pattern has not been received. A third type of pattern is effective for segmentation only after the receipt of both an inhibitory pattern and a subsequent enabling pattern. The enabling pattern may also remove the effect of the inhibitory pattern upon some or all of the first two pattern types. When the pattern size exceeds a preset maximum width without having been segmented, all three pattern types are inhibited, the pattern is rescanned and segmented with a blank scan, and a forced segmentation is produced at predetermined points within the pattern. The pattern types for both segmentation and recognition purposes may be selected from a number of pattern subsets, each subset being identified with a character set in a particular font. The characters on a document are initially scanned using a general measurement set. The number of measurements belonging to a particular subset are then counted until a predetermined number of them has appeared. At this point, the measurement switch from the general set to the subset identified as the font which is being read.

3,694,808
INSTRUCTION CONTROLLED DIGITAL SIGNAL DISPLAY CIRCUIT

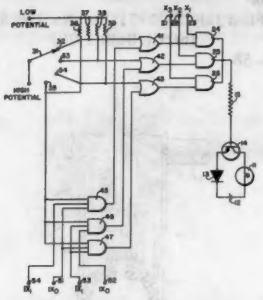
William C. Booth, Reisterstown, Md., assignor to The Singer Company, New York, N.Y.

Filed July 28, 1970, Ser. No. 58,969

Int. Cl. H04q 1/22

U.S. Cl. 340—147 R **6 Claims**

Digital computers utilize signal lamps on display panels for indicating the contents of the various registers in the computer. Many such displays are multiplexed; that is, the same panel lamps display the contents of all registers. To avoid the continual switching from one register to another, this invention uses in those cases where several registers may be used exclusively from each other a switching circuit which permits the operator to select the register to be displayed or to place the circuitry into a mode which will automatically display the contents of the particular register being used at that time. The



circuit uses a selector witch for selection purposes and a matrix of gates for automatic operation.

3,694,809
Patent Not Issued For This Number

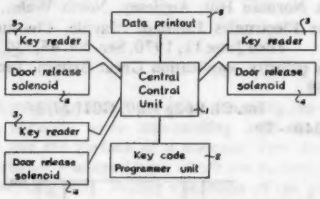
3,694,810
ELECTRONIC SECURITY SYSTEMS FOR MULTI-ROOMED BUILDINGS

Thomas R. Mullens, 3323 Redfern Place, North Vancouver, British Columbia, and Trevor J. Glave, Burnaby, British Columbia, both of Canada, assignors to said Mullens by said Glave

Filed Dec. 1, 1969, Ser. No. 881,199

Int. Cl. E05b 49/00; G06k 7/06; H04q 3/02

U.S. Cl. 340—149 R **14 Claims**



An electronic security system is provided for use in large institutions, such as hotels. A particular room is assigned a data-bearing room access device, (which may physically resemble a key), chosen at random from a group of such devices, the device bearing coded information which is entered and stored in a control unit at a memory location previously assigned to that room number. Until this information is removed from the memory, access to the room cannot be obtained except through the use of a device containing the required information, and further, attempted unauthorized access will cause an alarm signal to be activated.

3,694,811
QUERY AND RESPONSE SYSTEM WITH AUDIO MESSAGE SYNTHESIZING

Stanley J. Wood, Cherry Hill, N.J., assignor to Technitrend, Inc., Pennsauken, N.J.

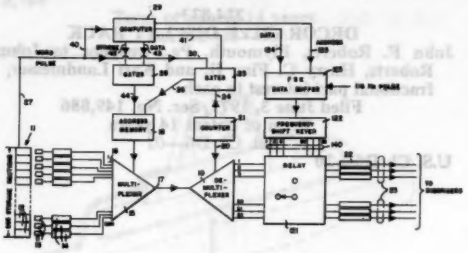
Filed Jan. 4, 1971, Ser. No. 103,735

Int. Cl. H04m 11/08

U.S. Cl. 340—152 R **8 Claims**

A query and response system embodying an audio response generator for synthesizing audio messages responsive to subscriber queries, said audio response generator comprising an

audio memory unit for storing data in analog form regarding a plurality of speech words, means for converting audio outputs from the memory to digital form, multiplexer and demultiplexer means controlled by data from a computer for distributing word data to individual subscriber output channels to



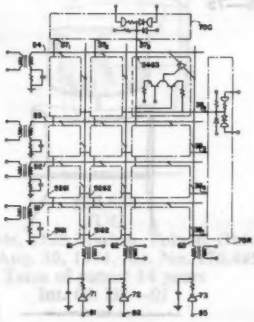
provide responses to subscriber queries, and means for converting the demultiplexer output from digital back to audio form for supply to subscribers. In one form of the invention means are provided for supplying either audio response or a response capable of actuating a teletype printer to each subscriber output channel as desired.

3,694,812

SWITCHING CIRCUIT HAVING A CONTROLLABLE SEMICONDUCTOR SWITCHING ELEMENT AND A SWITCHING MATRIX EMPLOYING THE SWITCHING CIRCUIT

Osamu Enomoto, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Aug. 20, 1971, Ser. No. 173,600
Int. Cl. H04q *3/50*
U.S. Cl. 340—166 R **13 Claims**



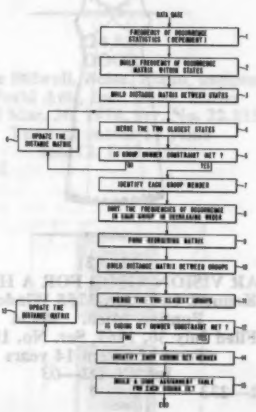
A circuit for switching analog signals between an input and output and having a high S/N ratio includes a controllable semiconductor switching device coupled between the input and output terminals and having a control electrode. The latter is coupled to a bypass circuit which grounds the control electrode at the analog signal frequency. The bypass circuit acts as a constant-current source when the voltage at the control electrode exceeds a predetermined value, the magnitude of the constant current being less than the current flowing through the switching element when the latter is conductive.

3,694,813

METHOD OF ACHIEVING DATA COMPACTION UTILIZING VARIABLE-LENGTH DEPENDENT CODING TECHNIQUES

Louis S. Loh, Mohegan Lake; Jacques H. Mommens, Briarcliff Manor, and Josef Raviv, Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,575
Int. Cl. G11b *13/00*; G06f *7/00*
U.S. Cl. 340—172.5 **15 Claims**



The present invention relates to a method practiceable on a general purpose electronic computer for statistically analyzing a data set and for producing a set of encoding and decoding (E/D) tables for achieving compaction of the original data set utilizing a variable length code. The method disclosed may operate under constraints of available core, desired compaction rate and speed of compaction/decompaction to produce differing sets of encoding/decoding tables depending upon the constraints imposed. The method would most normally be provided and utilized as a software package wherein the primary inputs are the data set itself and the above enumerated constraints. By utilizing a variable-length code wherein the code assignment is dependent upon the characteristic of preceding data good compaction rates may be achieved utilizing reasonable amounts of memory for the E/D tables.

The method comprises three principle steps. The first is the construction of a matrix showing the probability of occurrence of every member of the data set with respect to the immediately preceding member. The second step comprises grouping various rows or columns of this matrix having similar probabilities of occurrence, the third step comprises a reordering of all of the previously grouped rows or columns and finally a second clustering into coding sets may be performed.

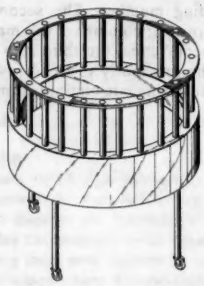
DESIGNS

SEPTEMBER 26, 1972

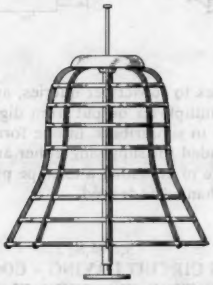
224,820
SLIP
Harvey B. Wittcoff, St. Louis County, and James L. Watel, Clayton, Mo., assignors to Wonder Maid, Inc., St. Louis, Mo.
Filed Feb. 22, 1971, Ser. No. 117,850
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—19

224,821
REAR VISION VISOR FOR A HELMET
Wyly Kenneth Crowder, 3255 Windcroft Drive, Pontiac, Mich. 48054
Filed July 30, 1969, Ser. No. 18,473
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—233

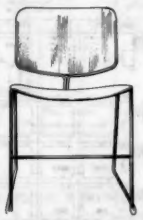
224,822
FRAME FOR A BABY CRIB
William Lee, Jr., 2800 Gordon Road, Atlanta, Ga. 30311
Substituted for abandoned design application Ser. No. 18,483, July 31, 1969. This application June 28, 1971, Ser. No. 157,780
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D5—5



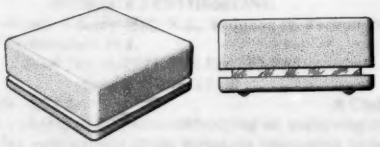
224,823
DECORATIVE DISPLAY RACK
John F. Roberts, Plymouth, Pa., assignor to John F. Roberts, Harry C. Fine II, and Karl Landmesser, Jr., fractional part interest to each
Filed June 3, 1971, Ser. No. 149,886
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—20



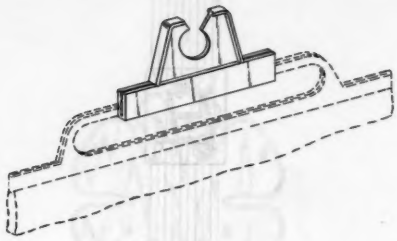
224,824
CHAIR
Randall P. Buhk, Grand Rapids, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed June 22, 1970, Ser. No. 23,612
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—75



224,825
TABLE
Dennis L. Jenkins, 4449 Ponce de Leon Blvd., Coral Gables, Fla. 33146
Filed Dec. 31, 1970, Ser. No. 26,725
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146

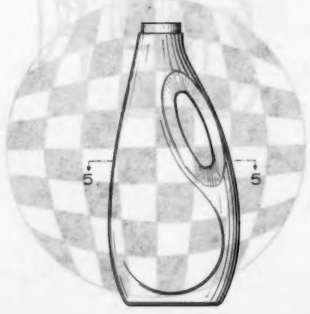


224,826
HOOK SUPPORT FOR CARRIER BAG HANDLE
Seymour Kamins, Oceanside, and Norman Rosenberg, Bayside, N.Y., assignors to CTP Industries Inc., Brooklyn, N.Y.
Original design application Oct. 9, 1968, Ser. No. 13,910. Divided and this application Oct. 6, 1969, Ser. No. 19,788
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—246



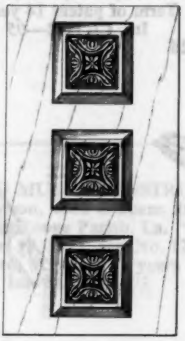
224,827
BOTTLE OR SIMILAR ARTICLE
Harry Kravitz, Wynnewood, Pa., assignor to Andorra Nurseries, Inc., Wynnewood, Pa.
Filed Apr. 8, 1971, Ser. No. 132,627
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—47

224,828
JUG
Edward J. Kretz, 2120 Marlon, Toledo, Ohio 43601
Filed Aug. 30, 1971, Ser. No. 176,449
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—42

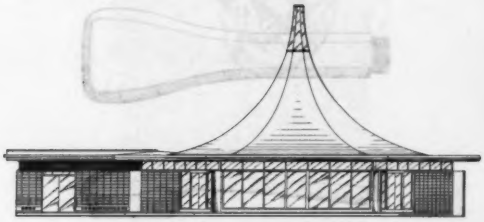


224,829
PLASTIC JAR
Ralph G. Amberg, Monticello, Ind., assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed June 4, 1971, Ser. No. 150,265
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—154

224,830
DOOR
Melvyn Dale Stilwell, Boise, Idaho, assignor to Old World Arts, Inc., Boise, Idaho
Filed Mar. 30, 1970, Ser. No. 22,115
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1



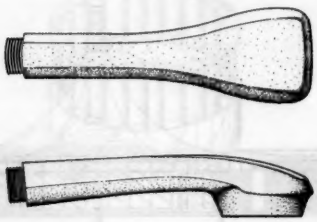
224,831
BUILDING
William F. Bigoney, Jr., Fort Lauderdale, Fla., assignor to Buning the Florist, Inc., Fort Lauderdale, Fla.
Filed July 19, 1971, Ser. No. 164,232
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



224,832
STEP STOOL
Harold R. Furno, Ontario, Calif.
(112 College Way, Claremont, Calif. 91711)
Filed Jan. 11, 1971, Ser. No. 105,784
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D15—8

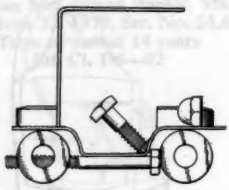
224,833
FISHING LURE BODY
Joseph F. Voros, 9930 Elmonte,
Overland Park, Kans. 66207
Filed Nov. 2, 1970, Ser. No. 25,761
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28

224,834
HAND SHOWER BODY
Harper Landell, Whitemarsh, Pa., assignor to Speakman
Company, Wilmington, Del.
Filed Dec. 7, 1970, Ser. No. 26,310
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35

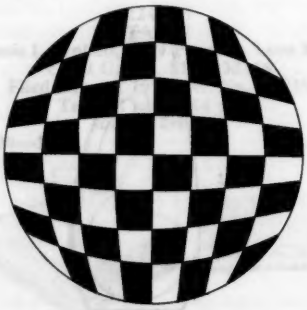


224,835
MONOLITHIC LIGHT EMITTING SEMI-
CONDUCTOR DISPLAY
Enghua Lim, Los Gatos, Calif., assignor to Monsanto
Company, St. Louis, Mo.
Filed Mar. 23, 1970, Ser. No. 22,019
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

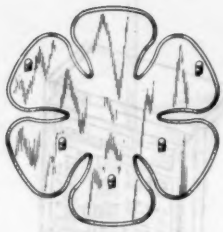
224,836
TOY VEHICLE FIGURE
Gar B. Waldron, Rte. 4, P.O. Box 1892,
Gresham, Oreg. 97030
Filed Mar. 9, 1970, Ser. No. 21,793
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15



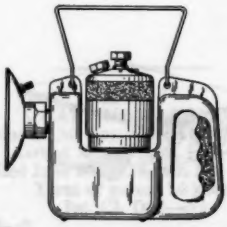
224,837
GAME BOARD
Byron L. La Goy, 5121½ Brighton Ave.,
San Diego, Calif. 92107
Filed Mar. 12, 1970, Ser. No. 21,878
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



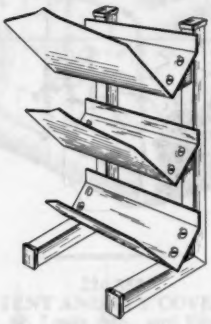
224,838
UTENSIL HANGER OR SIMILAR ARTICLE
David Douglas, 1119 Lincoln Blvd., Manitowoc, Wis. 54220
Filed Oct. 23, 1970, Ser. No. 25,628
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—29



224,839
CARBIDE LAMP
Frank S. Flider, Chicago, Ill., assignor to The Justrite Manufacturing Company, Chicago, Ill.
Filed Mar. 26, 1971, Ser. No. 128,654
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24



224,840
PLASTIC FILM DISPENSER
John T. Talman and Wilbur C. Paddock, St. Louis, Mo., assignors to TSI, Inc., St. Louis, Mo.
Filed Feb. 8, 1971, Ser. No. 113,811
Term of patent 14 years
Int. Cl. D31—*99*
U.S. Cl. D52—2

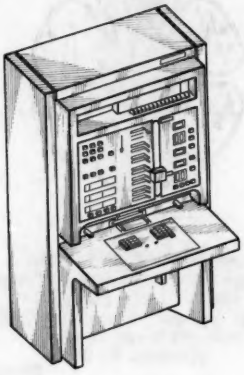


224,841
STRINGED MUSICAL INSTRUMENT
Calvert A. Dawson, 4680 Gibbens Payne Drive, East Baton Rouge Parish, La. 70714
Filed Mar. 18, 1971, Ser. No. 125,909
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1

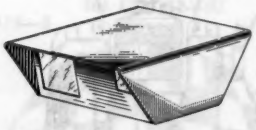
224,842
WRITING PAPER OR THE LIKE
Janice L. Lee, 85 Birch St., Troy, Mich. 48084
Filed Apr. 22, 1970, Ser. No. 22,558
Term of patent 14 years
Int. Cl. D19—*01*
U.S. Cl. D59—14

224,843
CARBON PAPER
Arthur W. Young, Pennsauken, N.J., assignor to Curtis-Young Corporation, Pennsauken, N.J.
Filed July 13, 1971, Ser. No. 162,330
Term of patent 14 years
Int. Cl. D19—*01*
U.S. Cl. D59—6

224,844
PHOTOGRAPHIC PRINTER
Ernest Muchenberger, Oberwil, Zurich, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland
Filed Mar. 31, 1971, Ser. No. 130,054
Claims priority, application Switzerland Nov. 13, 1970
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1

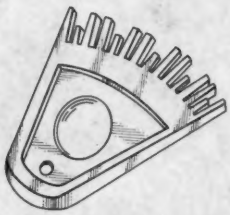


224,845
TRAFFIC MONITORING AND SURVEILLANCE SYSTEM HOUSING
Edward C. Matza, Dallas, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.
Filed Oct. 29, 1970, Ser. No. 25,850
Term of patent 14 years
Int. Cl. D29—*99*
U.S. Cl. D72—1

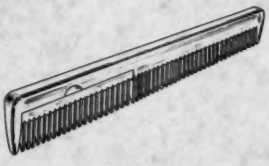


224,846
PENCIL
Perry Feuer, Roslyn, N.Y., assignor to Creative Creations, Inc., New York, N.Y.
Filed Apr. 21, 1971, Ser. No. 136,293
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—24

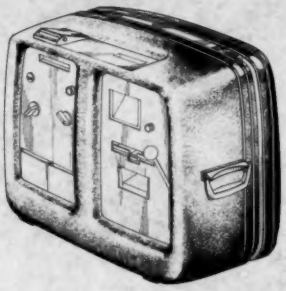
224,847
PALM HELD HAIR STYLING TOOL
Annie R. Thomas, 700 E. Emily, Longview, Tex. 75601
Substituted for abandoned design applications Ser. No. 2,718, June 20, 1966, and Ser. No. 10,653, Feb. 20, 1968. This application June 2, 1970, Ser. No. 23,261
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—8



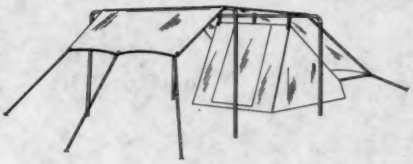
224,848
CARTRIDGE COMB
Nicholas D. McKay, 5314 Territorial Road, Grand Blanc, Mich. 48439
Filed June 29, 1970, Ser. No. 23,713
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—8



224,849
PORTABLE CARRYING CASE FOR PHOTOGRAPHIC I.D. EQUIPMENT
James M. Conner, Westchester, N.Y., assignor to Polaroid Corporation, Cambridge, Mass.
Filed June 17, 1971, Ser. No. 154,257
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1

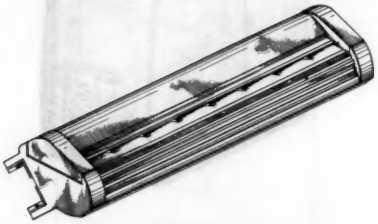


224,850
COMBINED TENT AND FLY COVER THEREFOR
Fred W. Enzel, St. Louis, Mo., and Edmund P. Hillary, Auckland, New Zealand, assignors to Kellwood Company, St. Louis, Mo.
Filed June 17, 1971, Ser. No. 154,266
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D88—3

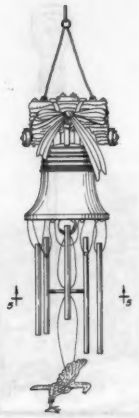


224,851
SHEET OR SIMILAR ARTICLE OF BED LINEN
John W. Rock, Wyckoff, N.J., assignor to Cannon Mills Company, Kannapolis, N.C.
Filed Feb. 16, 1971, Ser. No. 115,924
Term of patent 14 years
Int. Cl. D16—*13*
U.S. Cl. D92—26

224,852
DUAL BLADE UNIT FOR A SAFETY RAZOR
Francis W. Dorion, Jr., Hingham, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Mar. 15, 1971, Ser. No. 124,620
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3



224,853
WIND CHIMES, OR SIMILAR ARTICLE
Rudi P. Meyer, Chicago, Ill., assignor to Glovemakers, Inc., Chicago, Ill.
Filed Jan. 12, 1972, Ser. No. 217,439
Term of patent 14 years
Int. Cl. D29—*99*
U.S. Cl. D72—1



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TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF SEPTEMBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Pedersen, Johannes Sigurd, 3,693,398.

Aaron, Herbert S.; and Ferguson, Clyde Parker, Jr., to United States of America, Army. Preparation of 1-acetary-3-(alkyl)6,6,9-trimethyl - 7,8,9,10-telegraph six dibenzo. 3,694,464, Cl. 260-345.300.

AB Emmaboda Glasverk: *See—*
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AB Tico: *See—*
Frisk, Knot Olov, 3,693,655.

Abbe, Robert C., to ADE Corporation. Coupled inductance impedance measuring circuit with increased sensitivity and frequency independence. 3,694,741, Cl. 324-60.00c.

Abbott Laboratories: *See—*
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Abegg, Jean-Louis: *See—*
Kalopissis, Gregoire; Abegg, Jean-Louis; Ghilardi, Giuliani; and Philippe de Beaulieu, Henri, 3,694,141.

Abel, Edmund A., Jr. Pour-in, instant brewing electric coffee maker. 3,693,535, Cl. 99-282.000.

Abraham, Dennis G.; and Pawletko, Joseph P., to International Business Machines Corporation. Stepping motor control system using pulse injection. 3,694,725, Cl. 318-685.000.

Abu-Isa, Ismat A., to General Motors Corporation. Platable polypropylene. 3,694,249, Cl. 117-47.00a.

ACF Industries, Incorporated: *See—*
O'Leary, Walter E.; and Thornton, Duane V., 3,693,554.

Ackermann, Harry John; Blessin, Louis Dewey; Hermann, Leroy Nicholas; Ririe, Max Henry; and Swinbank, Everett John. Automatic poultry feeding device. 3,693,593, Cl. 119-52.0af.

Acme Products Incorporated: *See—*
Stanfield, Howard E.; Stanfield, Gary W.; and Camp, George F., 3,693,800.

Adamovske strojirny, narodni podnik: *See—*
Jurny, Josef; and Janecek, Jaroslav, 3,693,971.

Adams, Patrick James; and Lewis, Richard Newton, to Stauffer Chemical Company. Process for grafting organopolysiloxanes. 3,694,478, Cl. 260-448.20e.

Adcole Corporation: *See—*
Cole, Addison D., 3,693,626.

Addor, Roger Williams; and Wagner, Frank Albert, Jr., to American Cyanamid Company. Novel oximecarbamates. 3,694,481, Cl. 260-453.00r.

Addoutte, Roland: *See—*
Cuenoud, Gerard; and Addoutte, Roland, 3,693,549.

Addressograph-Multigraph Corporation: *See—*
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ADE Corporation: *See—*
Abbe, Robert C., 3,694,741.

Adickes, Cecil F., to Tonka Corporation. Toy vehicle launching device with safety mechanism. 3,693,282, Cl. 46-1.00r.

Adolphi, George, to Ametek, Inc. Multiple riveting machine. 3,693,832, Cl. 221-93.000.

Aerazur Constructions Aeronautiques Societe Anonyme: *See—*
Collec, Henri, 3,693,917.

Aerojet-General Corporation: *See—*
Kromrey, Robert V., 3,694,284.

Affsil, A. Brom: *See—*
Koenig, Wolf M., 3,694,062.

Agfa-Gevaert Aktiengesellschaft: *See—*
Frick, Hans-Dieter; Geyken, Erwin; Dawidowitsch, Peter; and Schausberger, Helmut, 3,693,528.
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Agmac, Inc.: *See—*
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Air Intake Renu: *See—*
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Air Preheater Company, Inc.: *See—*
Theoclitus, Gregory, 3,693,558.

Aishima, Itsuho; Takashi, Yukichi; and Koseki, Toshinori, to Asahi Kasei Kogyo Kabushiki Kaisha. Polyolefin compositions. 3,694,403, Cl. 260-41.00r.

Aisin Seiki Kabushiki Kaisha: *See—*
Hirozawa, Koichiro, 3,693,605.
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Nakamura, Masakatsu; Yonezawa, Toshio; Kato, Taketoshi; Watanabe, Masaharu; and Akatsuka, Minoru, 3,694,707.

Akfirat, John C.; and Gardon, Robert, to Ford Motor Company. Glass tempering die construction. 3,694,182, Cl. 65-288.000.

Akitebolaget Tudor: *See—*
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Akiyama, Kazuo: *See—*
Honda, Kiyoshi; Miyazaki, Mitsumasa; Nomura, Shozaburo; Akiyama, Kazuo; and Hirose, Kazutoyo, 3,694,415.

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Bakke, Jan Magnus; Heikman, Harald Erik; Hakanson, Christer Lennart; and Nilsson, John Martin, 3,694,505.

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Alberti, Jon; and Weber, Franz, to Boeing Company, The. Cargo handling system automatic center. 3,693,919, Cl. 248-119.00r.

Aldi, Angelo J. Aircraft rotor blade mechanism. 3,693,910, Cl. 244-7.00a.

Alexander, Milton; Garrett, John W.; and Riepenhoff, Ralph R., to United States of America, Air Force. Pilot armreach and cockpit control locator machine. 3,693,265, Cl. 35-12.00f.

Alexander, Stuart: *See—*
Wakefield, Norman; Alexander, Stuart; Morrish, James Francis; Beck, William; Groves, Raymond Sturgis; and Harvey, Michel J., 3,693,930.

Allard, Charles D.; and Allard, Eugene R., to Sana Products, Inc. X-ray film cassette holder. 3,694,653, Cl. 250-50.000.

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Allen, Francis E. Shear blade. 3,693,675, Cl. 143-22.000.

Allen, Richard H., to Joseph, David J., Company, The. Pollution control apparatus for combustive dismantling. 3,693,559, Cl. 110-18.00r.

Alliance Manufacturing Company, Inc., The: *See—*
Carli, Alvin J., 3,694,664.

Allied Chemical Corporation: *See—*
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Alvarez, Francisco, to Syntex Corporation. (6-Methoxy-2-napthyl) cadmium halide. 3,694,476, Cl. 260-429.00r.

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Anchor Hocking Corporation: *See—*
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Anders, Hans Joachim, to ITT Industries, Inc. Spot-type disc brake shoe. 3,693,764, Cl. 188-73.100.

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Anderson, Bror E.; and Schick, Margery L. Thermographic stencil sheet, manufacture thereof, and method of making an imaged stencil sheet. 3,694,245, Cl. 117-35.500.

Anderson, Jerrold L.; Haines, Robert C., Jr.; and Powell, Thomas C., to National Cash Register Company, The. Minute capsules and their manufacture, en masse. 3,694,372, Cl. 252-316.000.

Anderson, Roger. Apparatus for treating woven plastic bandages used in orthopedic casts. 3,693,587, Cl. 118-304.000.

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Andersson, Arne: *See—*
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Ando, Tetsuo; and Yamazaki, Hiroshi, to Sony Corporation. Semiconductor device. 3,694,704, Cl. 317-235.00r.

Andoniev, Sergei Mikhailovich; Gerber, Leonid Moiseevich; Kasyanov, Grigory Ivanovich; Kudinov, Gennady Alexandrovich; Kutsykovich, Dorina Borisovna; Nissenbaum, Tamara Izovna; Raikovsky, Jury Borisovich; Somchenko, Mikhail; and Filipiev, Oleg, to Vsesojuny Nauchno-Issledovatelsky i Predpriyaty, Chernoi Metallurgie. Device for evaporative cooling of metallurgical furnaces. 3,693,708, Cl. 165-101.000.

Andreev, Pavel Alexeevich; Blinov, Konstantin Andreevich; Gremilov, Dmitry Ivanovich; Kanaun, Boris Izrailevich; Kanaev, Andrei Andreevich; Aslanian, Gurken Nazarovich; Paramonov, Pavel Mikhailovich; Panshin, Boris Mikhailovich; Sobolev, Sergei Petrovich; nd Shubenko-Shubin, Leonid Alexandrovich. Inter-stage steam separator-superheater apparatus for turbines operating with saturated steam. 3,693,599, Cl. 122-483.000.

Andres, Rudolf; and Huber, Guntram, to Daimler-Benz Aktiengesellschaft. Anchoring arrangement of a safety belt in a motor vehicle. 3,694,028, Cl. 297-386.000.

Andrews, David; and Saucy, Gabriel. 3-Vinyl-cyclo penta (FM1) benzopyrans. 3,694,463, Cl. 260-345.200.

Andrews, Fred R.: *See—*
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Arndt, George D. System for improving signal-to-noise ratio of a communication signal. 3,694,753, Cl. 325-373.000.

Arnold, Eugene W.; and Hasenwinkle, Earl D., to Weyerhaeuser Company. Apparatus and technique for harvesting plants rooted in the ground. 3,693,721, Cl. 171-61.000.

Arnold, William Charles. Heald frame. 3,693,667, Cl. 139-91.000.

Aron, Edward A.; Griffith, Louis E.; and Tidd, James A., to Graphic Systems, Inc. Photocomposing machine with flexible fiber optics scanning member. 3,693,516, Cl. 95-4.50r.

Arvin Industries, Inc.: *See—*
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Ash, Arthur B.; and Stevens, Calvin L., to Ash Stevens, Inc. Alpha, alpha-dimethyl-beta, beta-dimercapto-n-lower alkyl-(phenyl and substituted phenyl) ethylamines. 3,694,498, Cl. 260-570.50s.

Ash, Bernard Edwin, to International Standard Electric Corporation. B-type insulation. 3,694,565, Cl. 174-117.00r.

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Assmus, Friedrich; Ganter, Wolfgang; and Flaig, Hans, to Gebruder Junghans G.m.b.H. Wrist watch with a piezoelectric crystal as timekeeping oscillator. 3,693,343, Cl. 58-231.00f.

Atkinson, Denzil Malcolm. Electric switches. 3,694,601, Cl. 200-144.00b.

Atlantic Richfield Company: *See—*
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Au, Kenneth K., to Microsystems International Limited. Field effect device and circuit having high current driving capabilities utilizing such device. 3,694,673, Cl. 307-304.000.

Auer, Siegfried O., to United States of America, National Aeronautics and Space Administration. Cosmic dust impact location detector or other similar outer space particles. 3,694,655, Cl. 250-83.60r.

Auphan, Michel Joseph, to U.S. Philips Corporation. Heart stimulator and heart-powered energy supply therefor. 3,693,625, Cl. 128-419.00p.

Aurenge, Jacques; and Desfeuillet, Jean. Multiple-way valve. 3,693,661, Cl. 137-625.180.

Automobiles Peugeot: *See—*
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Ayoub, Theodore A.; and Ayoub, Alfred. Suspension device for a cake of soap. 3,693,923, Cl. 248-360.000.

Azami, Kyoichiro; Ohotani, Hiroshi; and Fukutomi, Hiroshi, to Dainippon Ink and Chemicals, Incorporated. Process for the production of light-sensitive polymer. 3,694,383, Cl. 260-2.0xa.

Baba, Paul David: *See—*
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Baker, Charles W. Optical reflector system. 3,693,515, Cl. 95-4.50r.
Baker, Peter John; Gale, Graham John; and Jacobs, Barry Edward Adrian. Fluid pulsing device. 3,693,646, Cl. 137-81.500.
Bakke, Jan Magnus; Heikman, Harald Erik; Hakanson, Christer Lennart; and Nilsson, John Martin, to Aktiebolaget Bofors. Method of producing O-aminobenzamide. 3,694,505, Cl. 260-558.00a.
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Ballard, Paul E.; and Gannoe, Thomas E., to GTE Sylvania Incorporated. Butt welding and workpiece aligning apparatus. 3,694,613, Cl. 219-101.000.
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Balzer, Winton E.; and Knobel, Kenneth M. Tray covering and sealing apparatus. 3,693,318, Cl. 53-329.000.
Ban, Itsuki. Tape playing apparatus for use with plurality of endless magnetic tape cartridges. 3,693,981, Cl. 274-4.00f.
Banbury, John R.; and Nixon, William C. Electron probe apparatus using an electrostatic field to cause secondary electrons to diverge. 3,694,652, Cl. 250-49.50e.
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Baron, Frank A.; Benner, Roland G.; and Weinberg, Alan E., to Mallinckrodt Chemical Works. Purification of p-aminophenol. 3,694,508, Cl. 260-575.000.
Barrera, Roberto Gonzalez: *See—*
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Barron, Benjamin. High power audio amplifier system. 3,694,764, Cl. 330-146.000.
Barton, Oliver A.; and Murphy, Kevin P., to Allied Chemical Corporation. Ternary azeotropic compositions. 3,694,368, Cl. 252-171.000.
Bartoszevicz, Joseph G., to Fansteel, Inc. Grooving tool. 3,693,224, Cl. 29-96.000.
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Bassett, Ronald M.; and Gluth, Joseph F., to Mallory, P. R., & Co., Inc. Motor driven timer with cam operated buzzer construction. 3,694,591, Cl. 200-38.C ?a.
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Bauknight, Robert L. Clipboard illuminator. 3,694,644, Cl. 240-6.40b.
Baumeyer, Martin; and Neben, Luebeck Wilhelm, to Schmalbach-Lubeca-Werke. Packaging containers made of sheet metal with tear-open device. 3,693,827, Cl. 220-54.000.
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Beaucher, George J., to United States of America, Navy. Quick relese mounting apparatus. 3,693,921, Cl. 248-187.000.
Beck, Erich, to Ingenieurbureau Dr. Brehm AG. Method of, and apparatus for, spiral air classification of solid particles in a gaseous carrier. 3,693,791, Cl. 209-144.000.
Beck, William: *See—*
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Becker, Klaus; and Wolski, Karlheinz, to Demag Aktiengesellschaft. Syphon or solids having a piston which is connected with a suspension arrangement. 3,694,020, Cl. 294-64.00r.
Beckham, Leland J., to Allied Chemical Corporation. Method for the recovery of caprolactam. 3,694,433, Cl. 260-239.30a.
Becking, Donald H., to Udylite Corporation. Composition and process for chromium plating. 3,694,328, Cl. 204-51.000.
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Bergmanis, Karlis Alfredovich; Klotinish, Erik Ernestovich; and Matis, Imant Gustovich. Device for measuring permittivity of materials. 3,694,742, Cl. 324-61.0qs.

Bergstrand, Karl Gunnar, to Essem Metotest AB. System for the magnetic non-destructive testing of materials for long and short defects. 3,694,740, Cl. 324-37.000.

Bergum, Bernard C.; Bilhorn, John M.; Kenyon, Kenneth H.; Macaulay, William R.; and Youngquist, John A., to ESB Incorporated. Method of assembling multicell batteries comprising duplex electrode construction using continuous electrically conductive plastic-carrier strip. 3,694,266, Cl. 136-111.000.

Bergum, Bernard C., to ESB Incorporated. Multicell battery construction using continuous carrier strip of separator material. 3,694,268, Cl. 136-175.000.

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Berkowitz, Murray: *See—*
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Bertelson, Richard E.; and Mezitt, Robert W. Apparatus for creasing and tapering used metal containers. 3,693,396, Cl. 72-325.000.

Bertolet, John C. Answer and scoring sheet. 3,693,267, Cl. 35-41.00a.

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Bihler, Otto, to Bihler, Otto, KG. Apparatus for providing contact heads on contact members. 3,694,614, Cl. 219-103.000.

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Bishop, Forest M. Lawn mower vertical cutter attachment. 3,693,333, Cl. 56-16.100.

Bittner, Clarence W., to Shell Oil Company. Nickel-containing crystalline alumino-silicate catalyst and hydrocracking process. 3,694,345, Cl. 208-111.000.

Bitzer, Richard R.; and Reichard, William H., to Gates Rubber Company, The. Polyurethane elastomer rendered anti-static by treatment with iodine. 3,694,413, Cl. 260-75.0na.

Bjerking, Sven-Erik. Reinforcement elements for concrete structures. 3,693,311, Cl. 52-677.000.

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Blackmer, David E., to Instrumentation Laboratory, Inc. Sensor instrumentation. 3,694,734, Cl. 324-29.000.

Blair, Lesley W. Adjustable drill jig. 3,694,100, Cl. 408-105.000.

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Blatchford, John K.; Peterson, Edward C.; and Burda, Jan C., to Whirlpool Corporation. Heating element and method of making. 3,694,627, Cl. 219-543.000.

Blatherwick, Delbert T. Platen for vacuum holding of sheet material. 3,693,924, Cl. 248-363.000.

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Bloom, Martin S., to Imperial Chemical Industries Limited. Lapping and aligning of profiled sheets. 3,693,966, Cl. 271-1.000.

Bloomer, David John, to Hawker Siddeley Dynamics Limited. Automatic test equipment utilizing a matrix of digital differential analyzer integrators to generate interrogation signals. 3,694,632, Cl. 235-150.530.

Blue, James W.; Smith, Wayne R.; and Sodd, Vincent J., to United States of America, National Aeronautics and Space Administration. Production of high purity ^{122}I. 3,694,313, Cl. 176-11.000.

Blumenthal, Warren B., to National Lead Company. Method of producing and coating silver powder and the resultant product. 3,694,254, Cl. 117-100.000.

Blurton, Leon C.; and Cina, Saverio J., to Global Marine Inc. Air cushion drilling vehicle. 3,693,729, Cl. 173-23.000.

Bobard, Emile. Self-propelled machines for farming and analogous purposes. 3,693,332, Cl. 56-15.100.

Bobard, Emile; and Delaunay, Just. Stabilizers ensuring a vertical position to two-wheeled vehicles. 3,693,987, Cl. 280-6.00h.

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Boltze, Karl-Heinz; Brendler, Otfried; and Lorenz, Dietrich, to Traponwerke Dinklage & Co. Pharmacologically active esters and amides of N-[3-trifluoromethylphenyl]-anthranilic acid. 3,694,489, Cl. 260-471.00r.

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Bonikowski, Zbigniew; and Keen, Bruce Henry, to British Insulated Callender's Cables Ltd. Apparatus for detecting faults in elongated flexible material. 3,694,711, Cl. 318-6.000.

Bonner, William A., to Rockford Servo Corporation. Web guide apparatus. 3,693,855, Cl. 226-19.000.

Bookless, George W., to Bell & Howell Company. Quick release magnetic latch for copier exposure station. 3,694,078, Cl. 355-75.000.

Booth, William C., to Singer Company, The, mesne. Instruction controlled digital signal display circuit. 3,694,808, Cl. 340-147.00r.

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Bosshard, Walter: *See—*
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Botz, Roland, to Plasti-Fiber Formulations, Inc. Bagasse fiber product and process. 3,694,308, Cl. 162-55.000.

Boudart, Roger L. Method for processing papaw latex papaya to obtain papain. 3,694,315, Cl. 195-66.00r.

Bowen, Howard: *See—*
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Bowen Tools, Inc.: *See—*
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Bower, Robert G.; Eveland, Baisel L.; Markowitz, Ivan N.; and Masterson, Earl E., to Honeywell Inc. Card reader. 3,693,967, Cl. 271-10.000.

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Bowers, John C., to Bowers Instrument Company. Animal conditioned avoidance apparatus. 3,693,590, Cl. 119-1.000.

Boyer, Marcel-Louis. Vibration damping system for pinch roller. 3,693,861, Cl. 226-177.000.

Boynton, Richard Studley. Moment of inertia measuring instrument. 3,693,413, Cl. 73-65.000.

Brady, Lynn J.: *See—*
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Brahigbn, Ltd.: *See—*
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Brandeis, Richard, to Waltronic Company. Welding control system. 3,694,615, Cl. 219-114.000.

Branick, Charles Earl. Tire bead breaking tool. 3,693,692, Cl. 157-1.170.

Brantz, Malcolm H. Kinetic display. 3,694,645, Cl. 240-10.100.

Braun, Anton. Free piston engine bounce compressor. 3,694,111, Cl. 417-491.000.

Brauweiler, Wilhelm; and Mager, Gunther Winand, to Compagnie de Saint-Gobain-Pont-A-Mousson. Apparatus for winding strands of thermoplastic material, particularly of glass filaments in the course of their production. 3,693,896, Cl. 242-18.00a.

Brealey, Edward Reginald, to Rolls-Royce Limited. Electron beam method of securing a bearing race. 3,694,616, Cl. 219-121.0eb.

Breed, David S. Liquid integrating accelerometer. 3,694,594, Cl. 200-61.470.

Breitbach, Irwin G. Wig form. 3,693,848, Cl. 223-66.000.

Bremshey & Co.: *See—*
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Brendler, Otfried: *See—*
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Breslow, Jeffrey D.; Glass, Marvin I.; Meyer, Burton C.; Jaworski, Eugene; and Barlow, Gordon A., to Glass, Marvin, & Associates. Cable mounted toy vehicle and toy system employing the same. 3,693,290, Cl. 46-202.000.

Brewer, Earl G.: *See—*
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Brewin, Geoffrey M.: *See—*
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Brickner, Kenneth G., to United States Steel Corporation. Ferritic stainless steels with improved cold-heading characteristics. 3,694,192, Cl. 75-126.00b.

Brico Engineering Limited: *See—*
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Bridge, David, & Company: *See—*
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Briggs, Bill N., to United States of America, Army, mesne. Dual property steel armor. 3,694,174, Cl. 29-196.100.

Briley, Bruce Edwin, to Bell Telephone Laboratories, Incorporated. Transistor logic circuits. 3,694,666, Cl. 307-218.000.

Brill-Edwards, Harry W., to Chromalloy American Corporation. Method for coating heat resistant alloys. 3,694,255, Cl. 117-107.20p.

Brinkley, Ray D.: *See—*
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British Insulated Callender's Cables Ltd.: *See—*
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British Nylon Spinners Limited: *See—*
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British Petroleum Company, Limited, The: *See—*
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British Titan Products Company Limited: *See—*
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Brock, James Donald, to CMI Corporation. Asphalt preparation plant. 3,693,945, Cl. 259-146.000.

Brock, Jerry A.: *See—*
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Brodlin, Willi: *See—*
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Brook, David Whiteley; and Ward, Raymond, to British Titan Products Company Limited. Titanium compounds. 3,694,475, Cl. 260-429.500.

Brooks, Kenneth A.; Johnson, Lawrence L.; and Mathewson, James A., to International Business Machines Corporation. Actuator for elastic diaphragm switch keyboard. 3,693,775, Cl. 197-98.000.

Brooks, Robert E., to TRW Inc. Holographic correlator with a folded path acoustic cell input. 3,694,657, Cl. 250-216.000.

Brorein, William J.; and Polizzano, Fred F. Method of making metallic sheathed cables with foam cellular polyolefin insulation and method of making. 3,693,250, Cl. 29-624.000.

Broughton, James A., to Brown & Williamson Tobacco Corporation. Lightly prized tobacco. 3,693,629, Cl. 131-5.000.

Brouns, Jan Willem: *See—*
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Tolman, Thomas William Charles, 3,693,632.

Brown, Clarence K. Method of securing together a plurality of structural members. 3,693,247, Cl. 29-512.000.

Brown, Edgar D., Jr., to General Electric Company. Hydrocarbon or silicone lubricating oil containing dehalogenoethyl substituted organosilicon conpounds. 3,694,358, Cl. 252-49.600.

Brown, George A.: *See—*
United States of America, National Aeronautics and Space Administration, 3,694,700.

Brown, John M. Apparatus for blocking fluid flow in a well casing. 3,693,715, Cl. 166-55.000.

Brown, Joseph L.; and Brown, Neil N., to Brown Truck and Trailer Manufacturing Company. Cart structure for dragline systems. 3,693,552, Cl. 104-172.0bt.

Brown, Neil N.: *See—*
Brown, Joseph L.; and Brown, Neil N., 3,693,552.

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Brown Truck and Trailer Manufacturing Company: *See—*
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Brown, William L., to Rosemount Engineering Company. Electrical resistance element. 3,694,789, Cl. 338-238.000.

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Brurrier, Henry Richard, to Bell Telephone Laboratories, Incorporated. Signal coupling circuit. 3,694,765, Cl. 330-165.000.

Brush Beryllium Company, The: *See—*
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Bryant Grinder Corporation: *See—*
Cann, Roald, 3,693,297.

Bucher, Robert, to Sulzer Brothers Limited. Weft bobbin stand. 3,693,904, Cl. 242-131.000.

Buchi, George H.; Demole, Edouard; Eschenmoser, Albert; and Thomas, Alan F. Process for the preparation of 2,5-dimethyl-4,5-dehydropuran-3-1-4-one. 3,694,466, Cl. 260-397.800.

Buchta, Eberhard, to Beckman Instruments G.m.b.H. Infrared radiator arrangement. 3,694,624, Cl. 219-358.000.

Buckson, Wilson C. Tension control system. 3,693,939, Cl. 254-172.000.

Bucyrus-Erie Company: *See—*
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Budd Company, The: *See—*
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Budrys, Ignas; and Lee, Ernest O., Jr., to Stromberg-Carlson Corporation. Speed calling control and store. 3,694,583, Cl. 179-18.0ba.

Buehrig, Gordon M., to Ford Motor Company. Automobile. 3,694,025, Cl. 296-64.000.

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Buissiere, Jean, to Compagnie Generale d'Automatisme. Process for studying the growth and physiology of bacteria and receptacle for carrying out this process. 3,694,320, Cl. 195-144.000.

Bulatkin, Vladimir Dmitrievich: *See—*
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Bunte, William S.; and De Gasperis, Lino E., to Egan Machinery Company. Extrusion die deckle means. 3,694,132, Cl. 425-466.000.

Burch, Edward N. Underwater pile cutting saw. 3,693,676, Cl. 143-32.00r.

Burckhalter, Albert Cohen Frank O., to Westinghouse Electric Corporation. Protective system for automatic actuation of steam turbine drain valves. 3,694,103, Cl. 415-168.000.

Burda, Jan C.: *See—*
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Burgess, John Leslie; and Harvey, Joseph-Eric, to Maxam Power Limited. Thread guiding means for yarn winding. 3,693,899, Cl. 242-43.000.

Burgess, Linda C. Mobile nursery. 3,694,023, Cl. 296-24.00r.

Burina, Theodor; and Krause, Bernhard, to International Standard Electric Corporation. Circuit arrangement for supervising the coded output information of a translator in telecommunication systems and particularly telephone systems. 3,694,582, Cl. 179-19.0b.

Burke Concrete Accessories, Inc.: *See—*
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Burke, Oliver W., Jr. Silica pigments and elastomer-silica pigment masterbatches and production processes relating thereto. 3,694,398, Cl. 260-33.6ao.

Burndy Corporation: *See—*
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Bursian, Natalia Robertovna; Kogan, Samson, Borisovich; and Davydova, Zinaida Arkadievna. Process for the aromatization of hydrocarbons. 3,694,348, Cl. 208-138.000.

Burton, Charles O.: *See—*
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Burwell, Wayne G.; and Quickle, Charles F., Jr., to United Aircraft Corporation. Liquid fuel gas dynamic mixing laser. 3,694,770, Cl. 331-94.500.

Busker, Leroy H.; and Mosher, Robert J., to Beloit Corporation. Microwave moisture sensing system and method. 3,694,737, Cl. 324-58.50a.

Butler, Le Roy O. Portable folding steps and landing for a mobile home and the like. 3,693,754, Cl. 182-86.000.

Buttner, Horace J.: *See—*
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Buyak, William P., to North American Philips Corporation. Timing circuit with multiple time constants and switching means to connect and disconnect said time constants selectively. 3,694,672, Cl. 307-293.000.

Buza, Michael J.: *See—*
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Cadle, Terence M.: *See—*
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Caffry, John B., to Phillips Petroleum Company. Yarn texturing apparatus. 3,693,222, Cl. 28-1.600.

Cafiero, Gasper, to Metra Electronics Corporation. Splicing apparatus for splicing strip material, as film or magnetic tape. 3,694,294, Cl. 156-507.000.

Cahoy, Roger P.; and Sanjean, John, to Gulf Research & Development Company. Carbamyloxybenzylidenemalononitrile. 3,694,483, Cl. 260-465.00d.

Caillas, Jean Alin Robert. Packing block. 3,694,303, Cl. 161-164.000.

Calame, Jean Pierre: *See—*
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Calhoun, Ray. Combined boat hook and lure retriever. 3,693,280, Cl. 43-17.200.

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Calkins Manufacturing Company: *See—*
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Calkins, Oscar C., to Calkins Manufacturing Company. Roller assembly for boat trailer. 3,693,813, Cl. 214-84.000.

Callahan, Franis J., Jr., to Crawford Fitting Company. Tube coupling for large diameter tubes. 3,694,010, Cl. 285-334.400.

Callahan, James J.; and Snow, John Proctor, to Mc Card Corporation. Lubricating apparatus. 3,693,757, Cl. 184-7.00d.

Cambridge Instrument Company, Inc.: *See—*
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Campbell, William M.: *See—*
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Canadian Industries Limited: *See—*
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Cann, Roald, to Bryant Grinder Corporation. Apparatus and method for grinding irregular surfaces of revolution. 3,693,297, Cl. 51-94.00r.

Canon Kabushiki Kaisha: *See—*
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Sakamaki, Hisashi; Kimura, Yoshimasa; Sawamura, Osamu; and Sugiura, Susumu, 3,693,969.
Yamaji, Keizo; and Kurahashi, Akira, 3,694,069.

Cantonwine, Charles R. Automotive timing light to measure dwell angle. 3,694,733, Cl. 324-15.000.

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Carli, Alvin J., to Alliance Manufacturing Company, Inc., The. Reversing door operator. 3,694,664, Cl. 307-149.000.

Carlson, David John, to RCA Corporation. Mixer circuit. 3,694,756, Cl. 325-451.000.

Carlson, John A., to Conchemo, Incorporated. Throttle kill switch. 3,694,596, Cl. 200-61.870.

Carmel, Edwin L.: *See—*
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Carpay, Franciscus Marinus Anna; and Van Run, Adrianus Martinus Jacobus Gerardus. Method of manufacturing lamellar composites. 3,694,193, Cl. 75-129.000.

Carpenter, James H., Jr., to Carborundum Company, The. Workpiece treating apparatus. 3,693,296, Cl. 51-13.000.

Carroll, Kenneth A., to Singer Company, The. Valve guides for meter slide valves. 3,693,444, Cl. 73-268.000.

Carter, Frank L., to Pioneer Packaging, Inc. Display structure. 3,693,926, Cl. 248-460.000.

Carter, John Ed, to Allied Chemical Corporation. Single use inertia absorbing device. 3,694,019, Cl. 293-101.000.

Carville, James G.; and Rekesius, John F., to Savory Equipment, Inc. Apparatus and method of toasting bread like articles. 3,693,536, Cl. 99-386.000.

Casey, John A. Method and composition for sanitation of sugar factories. 3,694,262, Cl. 127-44.000.

Cashman, Robert L., to Sperry Rand Corporation. Stolen vehicle indicating device. 3,694,805, Cl. 340-64.000.

Cassel, Carlis E.; and Krueger, Donald S., to National-Standard Company. Wire reel for a coil of wire. 3,693,903, Cl. 242-129.

Castner, Charles S., to Schuyler Development Corporation. Compositions for cleaning and sterilizing milk. 3,694,365, Cl. 252-106.000.

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Cesca, Sebastiano; Roggero, Arnaldo; and Marconi, Walter, to Snam Progetti S.p.A. Vulcanizable amorphous olefinic terpolymers from alpha olefines and polyenes. 3,694,420, Cl. 260-80.780.

Ceskoslovenska akademie ved: *See—*
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Charchian, Loris J.; and Lech, Thaddeus, to Formspray Company. Anti-reverse clutch safety device. 3,693,770, Cl. 192-30.00w.

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Ciccarelli, Angelo. Tooth cleaner. 3,693,638, Cl. 132-91.000.
Cielo, John R.; and Hoffman, Harry S., Jr., to International Business Machines Corporation. Combined transformer and inductor device. 3,694,726, Cl. 321-2.000.
Cina, Saverio J.: *See—*
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Cincinnati Milacron Inc.: *See—*
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Citron, Joel P., 25% to Citron, Joel P. Stroboscopic speed display means for moving vehicles. 3,694,084, Cl. 356-25.000.
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Clark, Robert E., to Revco, Inc. Auxiliary refrigerating apparatus. 3,693,371, Cl. 62-222.000.
Cleaver, John C., to Aqua-Chem, Inc. Boiler. 3,693,598, Cl. 122-274.000.
Clement, Carl J., to Woodson Enterprises , Inc., The. Production and reproduction systems with endles film or tape cartridge. 3,694,067, Cl. 353-78.000.
Cleusix, Willy, to OMEGA Louis Brandt & Frere S.A. Timepiece movement. 3,693,344, Cl. 58-42.500.
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Cole, Addison D., to Adcole Corporation. Demand pacer with heart rate memory. 3,693,626, Cl. 128-419.00p.
Cole, Saxon, to American Air Filter Company, Inc. Control arrangement for an air heating apparatus. 3,694,625, Cl. 219-364.000.
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Coleman, Donald F.; and Fuzzell, Joe E., to Caterpillar Tractor Company. Driver circuit for speeding response of remotely controlled apparatus. 3,694,671, Cl. 307-254.000.
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Colinet, Andre; and Mercier, Jacques, to Regie Nationale des Usines Renault and Automobiles Peugeot. Heating and ventilating systems for vehicles. 3,693,532, Cl. 98-2.070.
Collec, Henri, to Aerazur Constructions Aeronautiques Societe Anonyme. Parachutes. 3,693,917, Cl. 244-149.000.
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Collins, William J. Device for sampling molten metal. 3,693,449, Cl. 73-354.000.
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Concelman, Carl W., to International Telephone and Telegraph Corporation. Snap lock coaxial connector. 3,694,793, Cl. 339-91.00p.
Conchemo, Incorporated: *See—*
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Congelliere, Peter; and Buttner, Horace J. Push-push switch with improved alternate make and break latching mechanism. 3,694,603, Cl. 200-153.00j.
Connelly, William; Sydenham, Leonard; and Szilagyi, John, to Canadian Industries Limited. Acrylic polymers. 3,694,388, Cl. 260-23.0ep.
Conrad, Oswald, to Daimler-Benz Aktiengesellschaft. Guide blades of axial compressors. 3,694,102, Cl. 415-115.000.
Conrad, Sherman E., to Delavan Manufacturing Co. Swirl air nozzle. 3,693,886, Cl. 239-432.000.
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Cooke, Robert R., to Procter & Gamble Company, The. Co-milling process for making culinary mixes. 3,694,230, Cl. 99-94.000.

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Cooper, Ralph F.; and Wagner, Charles J., to Goodrich, B. F., Company, The. Wire overhead. 3,694,283, Cl. 156-159.000.

Corbett, Sydney C., to Hockley Chemical Company Limited, The. Apparatus for treating articles with liquid treatment media. 3,693,639, Cl. 134-69.000.

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Court, Charles T. Vertically sliding door mounted in horizontally pivoted frame. 3,693,693, Cl. 160-195.000.

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Cox, John B.; and Stoltz, Jacque R. Time averaging method and apparatus for obtaining fluid measurements. 3,693,435, Cl. 73-194.00e.

Cozzarin, Virgil J.; Kappermann, Francis C.; and Kipple, Harry P., to Westinghouse Electric Corporation. Aerated powder pump. 3,693,842, Cl. 222-195.000.

Craig, Jack C. Fishing lure. 3,693,275, Cl. 43-15.000.

Craig, Paul N.; and Zirkle, Charles L., to Smith Kline & French Laboratories. 10-Bromoalkyl-anthracenes. 3,694,514, Cl. 260-648.00g.

Cramer, Robert L.; Henneman, John W.; and Dunbar, Jack E. Fluid mixing regulator. 3,693,653, Cl. 135-557.000.

Crandall, Stanley C.; and Puryear, David B., to Gilbert & Barker Manufacturing Company. Fluid pressure controlled power unit. 3,693,500, Cl. 91-4.00a.

Crane, Jacob; and Ford, James A. Copper base alloys. 3,694,273, Cl. 148-32.000.

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Creager, Wade E. Musical instrument with cam controlling reed vibration. 3,693,491, Cl. 84-402.000.

Cresswell, Ronald M.; and Schnapper, Melvin. Process of preparing 3-amino-2-cyano acrylamide. 3,694,484, Cl. 260-465.400.

Croce, Joseph; and Bayer, Kurt. Dog leash retriever. 3,693,596, Cl. 119-109.000.

Crook, Stanley R. Marine fender. 3,693,572, Cl. 114-219.000.

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Crow, Harold E.; Moffa, Joseph; and Berge, C. Frederick, to Armco Steel Corporation. Pipe and end attachment. 3,694,007, Cl. 285-5.000.

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Cuenoud, Gerard; and Addoutte, Roland, to Dunlop Holdings Limited. Conveyors. 3,693,549, Cl. 104-25.000.

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Cummins, Alfred B. Centered platform type play exerciser. 3,693,998, Cl. 280-87.010.

Cunningham, Cecil R.; Beach, William R.; and Brinkley, Ray D., to Owens-Corning Fiberglas Corporation. Twist frame apparatus. 3,693,338, Cl. 57-75.000.

Cunningham, Douglas J. Safety seat belts for vehicles. 3,693,221, Cl. 24-230.0av.

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Daffron, William G., to General Motors Corporation. Multidirectional sensor. 3,693,461, Cl. 73-514.000.

Daigle, Donald J.; Chance, Leon H.; and Drake, George J., Jr., to United States of America, Agriculture. Process for rendering cellulosic textiles flame retardant. 3,694,256, Cl. 117-136.000.

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Dalman, Donald P., to Gulf & Western Industrial Products Company. Infeed mechanism for can machinery. 3,693,567, Cl. 113-115.000.

Dambrine, Francis, to Fives Lille-Cail. Extraction apparatus. 3,693,540, Cl. 100-110.000.

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Danilewicz, John C.; and Szeike, Michael. N-(3-Chlorobenzenesulfonyl) acetamidines. 3,694,504, Cl. 260-556.0ar.

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Deane, Clifford T., to Vortex Air Corporation. Air pollution control device. 3,693,326, Cl. 55-230.000.
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Eaves, Robert F., Jr. Remailable mailing envelope. 3,693,869, Cl. 229-73.000.

Ebregt, Johannes. Process for the preparation of catalysts containing crystalline aluminosilicate zeolites. 3,694,378, Cl. 252-451.000.

Echo Science Corporation: *See—*
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Economopoulos, Panayotis C.: *See—*
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Edigarian, Zorab Parnakovich; Kudinov, Evgeny Ivanovich; and Sukhov, Vladimir Evgenievich, to Institut geologii i razrabotki goryuchikhiskopaemofh. Vibratory device for taking bottom sediments cores. 3,693,730, Cl. 175-6.000.

Edlin, Ray L., to Kelco Company. Method of producing a dehydrated food product. 3,694,236, Cl. 99-199.000.

Edwards Engineering Corporation: *See—*
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Edwards, James B., to Proctor & Gamble Company, The. Laundering aid. 3,694,364, Cl. 252-90.000.

Edwin, Allan I.; and Vlach, Thomas L., to Interactive Systems, Inc. Method and apparatus for detecting tool wear. 3,694,637, Cl. 235-151.300.

Egan, Bruce C., Jr.: *See—*
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Egan, Bruce C., Jr.; Rifkin, Morton S.; and King, Grover C., to Egan, Bruce C., Jr. Protective sliding wall panel assembly. 3,693,293, Cl. 49-56.000.

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Eggert, Walter S., Jr., to Budd Company, The. Vertical movement sensor. 3,694,724, Cl. 318-648.000.

Egnell, Lennart Oskar, to Sandvikens Jernverks Aktiebolog. Method of producing articles of composite material, and resulting products. 3,694,271, Cl. 148-12.000.

Eholzer, Ulrich: *See—*
Ley, Kurt; Eholzer, Ulrich; Nast, Roland; Metzger, Karl-Georg; and Fritsche, Dieter, 3,694,555.

Ehrlichmann, Merlin W., to West Creek Co., Inc. Camping stove. 3,693,610, Cl. 126-85.00b.

Eibl, Hansjorg; and Westphal, Otto, to Boehringer Ingelheim G.m.b.H. Higher alkano yl-propanediol-(1,3)-phosphoric acid-choline esters. 3,694,474, Cl. 260-403.000.

Eibl, Hansjorg E.; and Westphal, Otto, to Boehringer Ingelheim G.m.b.H. High alkano yl-propanediol-(1,3)-2-trimethylammonium-ethyl phosphates. 3,694,473, Cl. 260-403.000.

Eichacker, Harold F. Torqueless transmission. 3,693,462, Cl. 74-25.000.

Eichhorn, Georg: *See—*
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Eickmann, Karl. Fluid flow machine with axially biassed rotor assembly. 3,694,114, Cl. 418-82.000.

Eiler, Peter; and Sprave, Klaus, to Gottwald, Leo, K.G. Vehicle transmission. 3,693,742, Cl. 180-23.000.

Eisenberg, Robert M.; and Quick, George R., to Singer Company, The, mesne. Navigation light simulator. 3,694,558, Cl. 35-10.200.

Eisner, Nathan A., to York Feather & Down Corporation. Filling machine. 3,693,836, Cl. 222-77.000.

Eland, Paul D., to Singer-General Precision Inc. Gyromotor synchronization system. 3,694,716, Cl. 318-175.000.

Electrogasdynamics, Inc.: *See—*
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Elektra-Bregenz GmbH: *See—*
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Elektro-Apparatebau F. Knobel & Co.: *See—*
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Elhen, Karl C., to Modernfold of Canada Limited-Modernfold du Canada Limitee. Sectionalized panel structure. 3,693,694, Cl. 160-199.000.

Elitex, Zavody textilniho strojirenstvi Generalvi reditelstvi: *See—*
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Emanuelson, Roger C.; Stewart, Robert C.; and Vine, Raymond W., to United Aircraft Corporation. Fuel cell organic fiber matrix. 3,694,310, Cl. 162-157.00r.

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Engelhart, John E., to Esso Research and Engineering Company. Malononitrile oxime derivatives. 3,694,482, Cl. 260-455.00b.

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England, David C.; Raasch, Maynard S.; and Sheppard, William Arthur, to Du Pont de Nemours, E. I., and Company. Preparation of 2,4-bis(hexafluoroisopropylidene)-1, 3-dithietane by reaction of perfluoroisobutene with selected alkali metal salts. 3,694,460, l. 260-327.00m.

Engstrom, Hans-Erik Rye. Apparatus for removal of entrained air from cellulose pulp before bleaching of the pulp. 3,693,380, Cl. 68-5.00c.

Enk, Albert T., to Midland-Ross Corporation. Discharge mechanism for a walking beam furnace. 3,693,950, Cl. 263-6.00a.

Enomoto, Osamu, to Nippon Electric Company. Switching circuit having a controllable semiconductor switching element and a switching matrix employing the switching circuit. 3,694,812, Cl. 340-166.00r.

Enthone, Incorporated: *See—*
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Environment/One Corporation: *See—*
Rich, Theodore A., 3,694,085.

Ercoli, Alberto; and Gardi, Rinaldo, to Warner-Lambert Pharmaceutical Company. 17-Valerate ester of 6α~9α-difluorohydro-cortisone, its compositions and use as an anti-inflammatory agent. 3,694,471, Cl. 260-397.450.

Erdmann, Hans, to ITT Industries, Inc. Impact absorber for railroad cars. 3,693,768, Cl. 188-289.000.

Erdoesy, Everett W., 50% to Erdoesy, Gretha M. Electromagnetic engine. 3,694,679, Cl. 310-24.000.

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Erwin, John R., to Garrett Corporation, The. Turbomachinery blade. 3,694,104, Cl. 416-217.000.

ESB Incorporated: *See—*
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Evers, Hubertus N. C. Ribbon weaving machine. 3,693,669, Cl. 352/106/1/8/025.
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Falkenberg, Douglass R., to Douglass Manufacturing Company. Sharpening device. 3,693,219, Cl. 29-78.000.
Fancort Industries, Inc.: *See—*
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Fancy, Richard E., to General Motors Corporation. Control belt system for a vehicle body occupant restraining belt arrangement. 3,694,002, Cl. 280-150.0sb.
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Farber, Sheldon; and Wright, Arthur J., to National Cash Register Company, The. Chromogenic compounds. 3,694,461, Cl. 260-335.000.
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Farney, Leonard C.; and Groncki, Carole L., to Polaroid Corporation. Diffusion transfer product having heat activatable processing system and an opacity providing layer. 3,694,204, Cl. 96-29.00r.
Fawcett, Richard; Smith, Arthur William; and Westwood, David, to Imperial Chemical Industries Limited. Low pressure-drop catalytic reactor. 3,694,169, Cl. 23-289.000.
Feder, Friedhelm R., to Wedco, Inc. Closed circuit pneumatic conveying. 3,694,037, Cl. 302-22.000.
Fedorek, John M. Liquid wax applicator. 3,694,097, Cl. 401-206.000.
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Fiala, Edward J., to Continental Can Company, Inc. Method for can electrodeposition. 3,694,336, Cl. 204-181.000.
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Filipiev, Oleg: *See—*
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Fisher, James E.; Mitchell, Jack L.; and Wisdom, Gerald F., to Tiger Products, Inc. Support or stand for trees. 3,693,918, Cl. 248-46.000.
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Flack, Walter. Peg-board game apparatus. 3,693,976, Cl. 273-131.0ba.
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Fleming, Frederick A.; Koshar, Robert J.; and Wright, Charles D., to Minnesota Mining and Manufacturing Company. Fluorinated compounds. 3,694,404, Cl. 260-453.0al.
Flint, Hyland C. Seat assembly with coplanar parallelogram linkage. 3,694,027, Cl. 297-309.000.
Floria, Joseph A., to Du Pont de Nemours E. I., and Company. Azeotropic composition. 3,694,362, Cl. 252-67.000.
Flournoy, Norman E.; Dancy, Julian H.; and Trippet, Raymond, to Texaco Inc. Oil burner. 3,694,136, Cl. 431-265.000.
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Tillett, Thomas J.; and Straus, Barry, 3,693,805.
Fock, Jurgen; and Holtschmidt, Ulrich, to Goldschmidt, Th., A.G. Linear heat-hardenable copolymerizate. 3,694,418, Cl. 260-78.50r.
Foerster, George S., to Dow Chemical Company, The. Method of preparing lead article. 3,694,536, Cl. 264-111.000.
Foerster, Roy P., to Bunker-Ramo Corporation. Track and hold system. 3,694,668, Cl. 307-235.000.
Fontana, Anthony J., to General Electric Company. Plastic spring toggle action. 3,694,607, Cl. 200-172.00r.
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Foucauli, Pierre. Mixing plant for preparing materials comprising coated elements. 3,693,942, Cl. 259-2.000.

Fox, Raymond J., to Robertshaw Controls Company. Fuel control system and control device therefor or the like. 3,693,874, Cl. 236-15.00a.

Foxen, Benjamin F. Block molding apparatus. 3,694,128, Cl. 425-412.000.

Fraioli, Joseph, Sr. Lateral-bend endless chain belt conveyor assembly. 3,693,780, Cl. 198-182.000.

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Franco, Simone; Leoni, Alvaro; and Marini, Manlio, to Minnesota Mining and Manufacturing Company. Process for preparing N-(2-carboxamidoethyl) acrylamide. 3,694,506, Cl. 260-561.00n.

Frank, Lee Fitzpatrick, to Eastman Kodak Company. Acoustical gauge. 3,694,800, Cl. 340-1.00r.

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Freedman, Morris D., to Bendix Corporation, The. Character recognition system. 3,694,806, Cl. 340-146.30f.

Freeman, Arthur H.; and Vallone, Giacinto, to General Electric Company. Switch for electric knife with wiping action contact shorting bar. 3,694,604, Cl. 200-157.000.

Freeman, Maurice, to Imperial Chemical Industries Limited. Coating compositions. 3,694,394, Cl. 145-29.00w.

Freudenthal, Frank D.; and Kincaid, Gary L., to Gray Manufacturing Company, Inc. Vehicle lift. 3,693,938, Cl. 254-134.000.

Frick, Hans-Dieter; Geyken, Erwin; Dawidowitsch, Peter; and Schausberger, Helmut, to Agfa-Gevaert Aktiengesellschaft. Apparatus for processing strips of photographic material or the like. 3,693,528, Cl. 95-89.00r.

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Fricklas, Richard Leon. Fire resistant asbestos vapor barrier system. 3,694,306, Cl. 161-205.000.

Fridrich, Elmer G. Manufacture of foil seals. 3,693,241, Cl. 29-475.000.

Frisk, Knot Olov, to AB Tico. Device for connection of hydraulic apparatus. 3,693,655, Cl. 137-599.100.

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Fritz, Joseph Henry; and Johns, Thomas Gerald, to Bell Telephone Laboratories, Incorporated. Microhardness tester regulated by a magnetostrictive control arrangement. 3,693,417, Cl. 73-81.000.

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Joux, Jean-Louis Fernand; Mignot, Bernard Michel; and Billon, Michel Gaston Albert, 3,693,256.

Frontino, John E. Three dimensional artistic design construction and method of producing same. 3,694,296, Cl. 161-18.000.

Fuchs, Julius J.; and Loux, Harvey M. Preparation of 1-(carbamoyl)-n-(carbamoyloxy)- thioformimidates from acetoacetamides. 3,694,431, Cl. 260-239.00a.

Fueslein, Jerome L.; and Andrews, Fred R., to International Harvester Company. Mechanism for folding and locking disk harrow gangs. 3,693,724, Cl. 172-456.000.

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Fuji Shashin Film Kabushiki Kaisha: *See—*
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Fujii, Koichi; Sakai, Tomoo; and Kikuchi, Ichiro, to Nippon Soda Kabushiki Kaisha. Process for production of spheridal granules or lumps of anhydrous aluminum chloride. 3,694,170, Cl. 23-294.000.

Fujino, Kiyoshi; Otsuka, Shigenobu; Kaichi, Tetuo; Sugiyama, Takaharu; and Tamura, Koji, to Ube Industries Ltd. Fluid control system for selectively self-adjusting mill reduction force or interworking roll distance. 3,693,385, Cl. 72-8.000.

Fujisoku Electric Co., Ltd.: *See—*
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Fulton, Bertram A.; and Slouka, Richard A., to American Hospital Supply Corporation. Inertia release for dental handpiece hose retractor. 3,693,258, Cl. 32-22.000.

Funk, John W., to Burroughs Corporation. Releaseable clamp for a driving member of a strip-like medium. 3,693,856, Cl. 226-74.000.

Furuta, Koichi, to Nippon Kogaku K.K. Shutter safety device in a camera provided with an electric shutter. 3,693,524, Cl. 95-31.0el.

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Futterer, Bodo. Cylindrical coil winding for an electrical machine. 3,694,684, Cl. 310-198.000.

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Gable, Gerald K. Absorption refrigeration machine. 3,693,373, Cl. 62-476.000.

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GAF Corporation: *See—*
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Gaillard, Alphonse; and Laurenty, Francois, to C.O.C.E.I.S.A. Rueif-Malmaison. Device for the crystallization by heat exchange of a solute in solution in a liquor. 3,694,167, Cl. 23-273.00r.

Galat, Alexander. Differential herbicidal acid anhydrides of imidic acids and lower alkanoic acids. 3,694,503, Cl. 260-545.00r.

Gale, Graham John: *See—*
Baker, Peter John; Gale, Graham John; and Jacobs, Barry Edward Adrian, 3,693,646.

Gallagher, John Everett; and Herriott, Donald Richard, to Bell Telephone Laboratories, Incorporated. Wavefront measurement. 3,694,088, Cl. 356-106.000.

Gannoe, Thomas E.: *See—*
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Gant, Preston L., to Continental Oil Company. Process for the trapping of mercury vapors and apparatus therefor. 3,693,323, Cl. 55-72.000.

Ganter, Wolfgang: *See—*
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Gardner, Jimmy D., to Mission Manufacturing Company. Cutter insert for rock bits. 3,693,736, Cl. 175-410.000.

Gardon, Robert: *See—*
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Gariel, Paul. Floating tower for underwater dredging. 3,693,272, Cl. 37-63.000.

Garland, Carl C. Capsule finishing apparatus. 3,693,320, Cl. 53-167.000.

Garman, Wilbur G. Linkage for a reciprocating engine crankshaft. 3,693,463, Cl. 74-38.000.

Garrett Corporation, The: *See—*
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Fitzgibbon, Thomas F., 3,693,761.

Garrett, John W.: *See—*
Alexander, Milton; Garrett, John W.; and Riepenhoff, Ralph R., 3,693,265.

Garrett, William, to Flairescence Ltd. Heated hair roller. 3,693,635, Cl. 132-33.00r.

Gartner, Jurgen. Novel polyurethane films. 3,694,401, Cl. 260-37.00n.

Gates Rubber Company, The: *See—*
Bitzer, Richard R.; and Reichard, William H., 3,694,413.

Gay, Pierre. Strip accumulator. 3,693,860, Cl. 226-119.000.

Gebhart, Herbert J., Jr.: *See—*
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Gebr. Boehler & Co.: *See—*
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Gee, Bernard Arthur: *See—*
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Gehrmann, Hasso, to Elektra-Bregenz GmbH. Space saving kitchen unit. 3,694,046, Cl. 312-196.000.

Geigy, J. R., A.-G.: *See—*
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Roth, Willi; and Schenk, Otto Erwin, 3,694,546.

Gelfand, Leonard, to Erico Products, Inc. Reinforcing bar coupling. 3,694,012, Cl. 287-110.000.

Gelin, Robert J., to Owens-Corning Fiberglas Corporation. Method for forming a molded article. 3,694,541, Cl. 264-294.000.

Gelsenberg Beazin Aktiengesellschaft: *See—*
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Genakis, Joseph M. Step cam disc cylinder lock. 3,693,384, Cl. 70-364.00a.

Genannt, Wilhelm; Brodlin, Willi; and Weishaupt, Siegfried, to Weishaupt, Max, GmbH. Method and apparatus for gasifying liquid fuels and effecting a complete combustion thereof. 3,693,887, Cl. 239-500.000.

General Dynamics Corporation: *See—*
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General Electric Company: *See—*
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Gerber, Arthur M.; Story, Sybil N.; and Walworth, Vivian K., to Polaroid Corporation. Method of forming capsules of polymer coated silver halide grains. 3,694,252, Cl. 117-93.000.

Gerber, Arthur M.; and Walworth, Vivian K., to Polaroid Corporation. Method of forming capsules of polymer coated silver halide grains. 3,694,253, Cl. 117-93.310.

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Gerigk, Gunter; and Klendauer, Wolfgang, to Kalle Aktiengesellschaft. Apparatus for the interior coating of a cellulose tube. 3,693,588, Cl. 118-407.000.

Geyken, Erwin: *See—*
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Gibson, Royal H., to Gibson Associates Incorporated. Bottle cap and pouring fitment assembly. 3,693,847, Cl. 222-546.000.

Giebel, Joseph L.; and Temple, Ernest E., to Mine Safety Appliances Company. Explosively actuated tool with magnetic head. 3,693,862, Cl. 227-11.000.

Gierer, Josef Franz; and Norin, Carl Torbjorn, to Svenska Traforskningsinstitutet. Lignin-preserving bleaching of cellulose pulp. 3,694,309, Cl. 162-65.000.

Gifford, Robert T., to Vernay Laboratories, Inc. Valve assembly. 3,693,651, Cl. 137-493.000.

Gilbert & Barker Manufacturing Company: *See—*
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Gilbert, Jerry E., 50% to Foster, James Craig, Jr. Hair collecting collar for barbershop use. 3,693,634, Cl. 132-9.000.

Gilbert, Kendall E. Manipulator system. 3,693,504, Cl. 91-385.000.

Gildner, Kenneth J., to Laboratory Data Control, Inc. Liquid flow meter. 3,693,436, Cl. 73-194.00e.

Gillemot, George W.: *See—*
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Gilman, Marvin A.: *See—*
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Gimbert, Leon M. Preferred customer communication system. 3,694,584, Cl. 179-18.00d.

Giorgi, Angelo L.; and Szklarz, Eugene G., to United States of America, Atomic Energy Commission. High-transition-temperature superconductors in the Nb-Al-Ge system. 3,694,274, Cl. 148-32.000.

Girling Limited: *See—*
Ingram, Brian; Harries, David Anthony; and Phoenix, Lancelot, 3,694,038.

Gladky, Dmitry Fedorovich: *See—*
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Glance, Patrick M., to Ford Motor Company. Articulated brake pedal. 3,693,471, Cl. 74-518.000.

Glandorf, Kaete; and Scheurer, Guenter, to Benckiser-Knapsack GmbH. Spreadable food composition and process of making same. 3,694,219, Cl. 99-1.000.

Glass, John P. Method of making hollow concrete panels. 3,694,531, Cl. 264-71.000.

Glass, Marvin, & Associates: *See—*
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Glass, Marvin I.: *See—*
Breslow, Jeffrey D.; Glass, Marvin I.; Meyer, Burton C.; Jaworski, Eugene; and Barlow, Gordon A., 3,693,290.

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Glave, Trevor J.: *See—*
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Gleason, William R. Dual welding wire feed for arc welder. 3,694,620, Cl. 219-130.000.

Gleeson, James E.: *See—*
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Gleim, William K. T., to Universal Oil Products Company. Slurry hydrorefining of black oils with mixed vanadium and manganese sulfides. 3,694,352, Cl. 208-215.000.

Glenn, William Ellis, to Columbia Broadcasting System. Electron gun with anode segments for beam position detection. 3,694,687, Cl. 313-78.000.

Gley, Paul R., to Rex Chainbelt Inc. Touch latch. 3,694,015, Cl. 292-80.000.

Global Marine Inc.: *See—*
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Globe-Union Inc.: *See—*
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Gluth, Joseph F.: *See—*
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Golde, Karl-Heinz; and Simons, Willi, to Schloemann Aktiengesellschaft. Turret for casting ladles. 3,693,960, Cl. 266-38.000.

Goldman, Gerald M.: *See—*
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Goldman, Gerald M.; and Smith, Sherman, said Smith assor. to Goldman, Gerald M. Copier system. 3,693,520, Cl. 95-12.000.

Goldner, Sandor. Cassette tape playout sensing, indication and protecting means. 3,694,585, Cl. 179-100.20s.

Goldschmidt, Th., A.G.: *See—*
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Golembeski, John Joseph, to Bell Telephone Laboratories, Incorporated. Equalization circuit employing differential amplifier. 3,694,761, Cl. 330-24.000.

Gomarasca, Piero; and Scolastico, Carlo, to Laboratorio Prodotti Biologici Braglia. Novel 18-nor androstane derivatives. 3,694,470, Cl. 260-397.450.

Good, Arthur L.; and Reese, Robert P., to Reese Products, Inc. Hitch combination for preventing the coupling of two vehicles having mismatching vehicle characteristics. 3,694,006, Cl. 280-507.000.

Goodrich, B. F., Company, The: *See—*

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Gordon, Frederick Armstrong; Griffin, James Richard; and Pezzarossi, John Joseph, to American Standard Inc. Water control for toilet tanks. 3,693,649, Cl. 137-414.000.
Gottwald, Leo, K.G.: *See—*
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Reid, Philip L.; and Holcombe, Edward L., 3,693,314.
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Graf, Carlton E.; and Volkmann, Werner K., to General Electric Company. Methods of inverter voltage control by superimposed chopping. 3,694,718, Cl. 318-227.000.
Grandle, James Arthur, Jr., to Bell Telephone Laboratories, Incorporated. Coin station conductor leakage test arrangement. 3,694,587, Cl. 179-175.20r.
Grannis, Norman J., to Computer Design Corporation. Add subtract apparatus for binary coded decimal numbers. 3,694,642, Cl. 235-170.000.
Grantham, Frederick W. Continuous washing apparatus. 3,693,382, Cl. 68-96.000.
Graphic Systems, Inc.: *See—*
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Gray Manufacturing Company, Inc.: *See—*
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Gray, Thomas J.; Picchiottino, John B.; and Hackett, Kenneth R., to Phonocopy, Inc. Electrostatic facsimile printer. 3,694,574, Cl. 178-6.60a.
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Greven, Johann, to Schumag Schumacher Metallwerke Gesellschaft mit beschrankter Haftung. Reciprocating carriage drawing machine. 3,693,395, Cl. 72-287.000.
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Griffith, John Q., III; William, Edward S.; and Reiland, William H., Jr., to Sun Oil Company. Hydraulic oil composition. 3,694,363, Cl. 252-72.000.
Griffith, Louis E.: *See—*
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Grobman, William, to Harris-Intertype Corporation. Sheet handling apparatus. 3,693,970, Cl. 271-59.000.
Groenhof, E. D., to Dow Corning Corporation. Bis (triorganosilyl) phosphate compositions. 3,694,479, Cl. 260-448.20n.
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Grube, William L., to MacLean-Fogg Lock Nut Co. Method of securing fasteners to sheet material. 3,693,237, Cl. 29-432.200.
Gruenewald, Larry E.; and Kistner, John F., to Minnesota Mining and Manufacturing Company. Hydrophilic nonwoven web and method of making it. 3,694,301, Cl. 161-159.000.
Grunwald, John J.; Rhodenizer, Harold L.; and Slominski, Leo J., to MacDermid Inc. Electroless copper plating. 3,694,250, Cl. 117-50.000.
Grygera, James W.; Charlton, James R.; and Swenson, Kenneth S., to Eaton Corporation. Cross reference power supply. 3,694,662, Cl. 307-24.000.
GTE Sylvania Incorporated: *See—*
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Boelke, Gilbert L., 3,694,766.
Guardado, Jose Cavazos; Talavera, Jorge Cervantes; and Ibarra, Alcibiades Gonzalez. Self-reversing rear furrow wheel assembly for a mounted reversible disk plow. 3,693,723, Cl. 172-212.000.
Guarrera, Anthony T. Shoe construction and repair unit therefor. 3,693,269, Cl. 36-15.000.
Guazzone, Bruno, to Muller, Hans, Dr., Ing., Chemie-Apparatebau. Filter device. 3,693,803, Cl. 210-330.000.
Gubarev, Yakov Fedorovich: *See—*
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Guenther, Karl R., to Bjorksten Research Laboratories, Inc. Carbon dioxide sensors. 3,694,164, Cl. 23-254.00r.
Guinard, Paul Andre. Immersible electric pump arrangements. 3,694,110, Cl. 417-424.000.
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Gutner, Kenneth H. Drawer slide structure. 3,694,049, Cl. 312-347.000.
Guttwein, Gunter K.; Ballato, Arthur D.; and Lukaszek, Theodore J., to United States of America, Army. VHF-UHF piezoelectric resonators. 3,694,677, Cl. 310-9.600.
Guyonnet, Marcel Aime Rene, to Fromageries Bel-La Vache qui Rit. Device for dispensing a fluid substance, and more particularly melted cheese. 3,693,674, Cl. 141-242.000.
H & H Equipment Co.: *See—*
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Hall, John B.; and Vock, Manfred, to International Flavors & Frangrances Inc. Flavoring methods and compositions containing 3-phenyl pentenals. 3,694,232, Cl. 99-140.00r.
Hallaman, Allan D. Traction belt. 3,694,040, Cl. 305-38.000.
Hallden Machine Company, The: *See—*
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Halm, Frank J., III, to Kaman Aerospace Corporation. Assembly for use with conveyor system for separating and diverting objects. 3,693,778, Cl. 198-29.000.

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Handy, James W. Carpet anchoring means. 3,693,212, Cl. 16-16.000.

Hanna, Drexel W., Jr., to Totuus Communications Inc. Pserodo-random code recognition receiver. 3,694,757, Cl. 325-466.000.

Hansen, Henry H. Dispenser. 3,693,841, Cl. 222-195.000.

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Harao, Norio; and Yano, Motohiro, to Tokyo Shibaura Electric Co., Ltd. Unidirectional double deflection type cathode ray tube. 3,694,686, Cl. 313-75.000.

Hardegger, Emil; and Meier, Arthur Josef Johann. Streptozotocin and derivatives. 3,694,428, Cl. 260-211.00r.

Hardenberg, Horst, to Daimler-Benz Aktiengesellschaft. Valve seat for an inlet valve of mixture-inducing internal combustion engines. 3,693,606, Cl. 123-141.000.

Harding, Albert Frederick; Pearce, Brian; and Thomas, William Llewelyn, to British Petroleum Company, Limited, The. Sample injection device. 3,693,455, Cl. 73-422.00r.

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Hardy, Joseph. Portable hand truck. 3,693,996, Cl. 280-47.340.

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Harfenist, Morton; and Bautzly, Richard, to Burroughs Wellcome & Co. Anti-tapeworm infection composition. 3,694,556, Cl. 424-326.000.

Harnden, John D., Jr., to General Electric Company. Electrical resistance heater. 3,694,626, Cl. 219-541.000.

Harper, William Sheridan; and Daigler, David Wayne, to FMC Corporation. Production of hydrogen peroxide from aqueous acidic solution obtained by hydrolysis. 3,694,154, Cl. 23-207.000.

Harries, David Anthony: *See—*
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Harris, Colin; and Meacham, Eric Richard, to Hough, Hoseason & Company, Limited. Detergent solutions. 3,694,366, Cl. 252-106.000.

Harris, Richard H.; and Sedaris, Louis H., to International Business Machines Corporation. Elastic diaphragm switch actuator. 3,694,606, Cl. 200-168.00g.

Harris-Intertype Corporation: *See—*
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Harrison, John, to Spra-Con Company, The. Pusher loading means for conveyors. 3,693,776, Cl. 198-23.000.

Hart, Joseph J.: *See—*
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Hart, Stephen N., to Fancort Industries, Inc. Vaginal syringe package including a supply of disposable dispensing containers and integral means for storing same. 3,693,783, Cl. 206-17.500.

Hart, Thomas W., Jr.; and Economopoulos, Panayotis C., to Semi-Conductor Electronic Memories Incorporated. Differential current sense amplifier. 3,694,763, Cl. 330-30.00d.

Harte, Richard A.; and Amstutz, Edwin A., to Gregory System, Inc. Photocoagulation means and method for depilation. 3,693,623, Cl. 128-303.100.

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Harvey, Donald M.; and Michater, Chester W., to Eastman Kodak Company. Latch and pressure-applying device. 3,693,521, Cl. 95-13.000.

Harvey, James Edward, to Eastman Kodak Company. Photographic printing apparatus and method for reproducing an original having separate major areas of respectively different densities. 3,694,079, Cl. 355-77.000.

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Hashimoto, Hiroshi; Satou, Takehide; Sudo, Kengo; and Ono, Naoya, to Hitachi, Ltd. Photometer. 3,694,092, Cl. 356-188.000.

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Hattori, Michio: *See—*
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Haugwitz, Rudiger D.; and Uhoch, John, Jr., to Olin Corporation. Method of controlling the growth of bacteria and using the phenythydrozine salt of 2-mercaplopyridine-N-oxide. 3,694,553, Cl. 424-263.000.

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Hauser, Raimund: *See—*
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Heckles, John S.; and Quinn, Edwin J., to Armstrong Cork Company. Phosphorus-containing sugar polyols and polyurethane foams therefrom. 3,694,430, Cl. 260-234.00r.

Hedberg, David A., to Melray Manufacture Company. Safety parts feeder for presses. 3,693,386, Cl. 72-24.000.

Heikman, Harald Erik: *See—*
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Hein, Louis T. Battery terminal bridge. 3,694,794, Cl. 339-95.00b.

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Heinz, Robert G.; Cohen, Harry; and Carmel, Edwin L., to Pullman Incorporated. Refrigerator vehicle floor extrusion. 3,693,306, Cl. 52-283.000.

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Hensen, Friedhelm: *See—*
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Hickling, Diane L. Infant wrapping blanket. 3,693,190, Cl. 2-69.500.
Hicks, Harris Vernon, to Lucas, Joseph, (Industries) Limited. Lighting systems for road vehicles. 3,694,646, Cl. 240-41.300.
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Hiroshi, Horino; and Masato, Matsuo, to Japanese Geon Company, Ltd., The. Vinyl chloride polymer compositions. 3,694,525, Cl. 260-899.000.
Hirozawa, Koichiro, to Aisin Seiki Kabushiki Kaisha. Speed controller for a diesel engine. 3,693,605, Cl. 123-140.0mp.
Hirst, Charles M., Jr.; and Lipshield, Eugene C., to Orscheln Brake Lever Mfg. Company. Parking brake operating means. 3,693,472, Cl. 74-518.000.
Hirth, William R., to Optisonics Corporation. Framing adjuster for single frame filmstrip projector. 3,694,064, Cl. 352-163.000.
Hiscock, Earle F. Sail rig. 3,693,571, Cl. 114-102.000.
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Homeier, Ronald F., to FMC Corporation. Training apparatus for driven belts. 3,693,781, Cl. 198-202.000.
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Hornig, Rudolf; and Sailer, Siegfried, to Daimler-Benz Aktiengesellschaft. Tightening device for automatically tightening bolts and the like. 3,693,726, Cl. 173-12.000.
Horsewell, Henry George; and Terry, Arthur John, to Brown and Williamson Tobacco Corporation. Packaging of liquids. 3,693,369, Cl. 62-60.000.
Horst, Robert L.; and Ringer, Richard M., to Armstrong Cork Company. Pattern repeat length control system. 3,694,634, Cl. 235-151.100.
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Iseli, Hans, to Vereinigte Drahtwerke A.G. Method for the fabrication of nail plates and apparatus for the performance of the aforeside method. 3,694,288, Cl. 156-269.000.
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Iwasaki, Sadayoshi, to Alps Electric Co., Ltd. Rotary switch having a torsion spring snap mechanism. 3,694,602, Cl. 200-153.00l.
Izzo, Henry J.; and Burton, Charles O., to Gentry Corporation. Process for preparing shelf-stable, free-flowing dehydrated cheese products in granulated or powdered form. 3,694,231, Cl. 99-115.000.
Jaccodine, Ralph James, to Bell Telephone Laboratories, Incorporated. Method of forming closely spaced conductive layers. 3,693,251, Cl. 29-625.000.
Jackson, Billy G., to Lilly, Eli, and Company. Process for preparing cephalosporin compounds. 3,694,437, Cl. 260-243.00c.
Jacobitz, Harvey A., to C-H Tool & Die Corporation. Shell reloading apparatus. 3,693,497, Cl. 86-28.000.
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Jager, Georg; Wenger, Helmut; and Zangl, Karl, to Zongl GmbH. Cutting apparatus and cutting head therefor. 3,693,253, Cl. 30-140.000.

Jakob, Heinz: *See—*
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Jansson, Lars Olov Lennart; and Ljungstrom, Lars Gosta, to Sandvikens Jernverks Aktiebolag. Method of manufacturing filler material for welding. 3,693,240, Cl. 29-474.300.

Jantzen, Charles A.; and Canziani, Victor J. Exposure meter. 3,694,093, Cl. 356-226.000.

Japanese Geon Company, Ltd., The: *See—*
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Jarusik, Paul; and Pociluyko, Alexander, to Scott Paper Company. Holding device and diaper system utilizing such device. 3,693,621, Cl. 128-287.000.

Jaubert, Pierre; and Lassere, Jean. Conveyor belts. 3,693,218, Cl. 24-38.000.

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Jenkins, Philip W., to Eastman Kodak Company. Silver halide emulsions containing methine dyes with 1H, 5H-pyrazolo [1,2-a] pyrazole-1,3 (2H), 5, 7 (6H)-tetrone Nucleus. 3,694,216, Cl. 96-128.000.

Jennings, Ralph L., to Economy Forms Corporation. Release plate for a collapsible culvert form. 3,693,927, Cl. 249-11.000.

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Johnson, Charles R.; and Henderson, Jack F. Utensil for use in cooking tortillas. 3,693,537, Cl. 99-426.000.

Johnson, Joseph A., to Jomar Industries, Inc. Multiple injection blow molding machine. 3,694,121, Cl. 425-168.000.

Johnson, Kermit B., to Hydrautic Products Corporation. Adjustable hydraulic shock absorber. 3,693,767, Cl. 188-287.000.

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Johnson, Sven J. Liquid level measurement device. 3,693,445, Cl. 73-290.000.

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Jonas, David Andrew; and Owen, William John, to Dow Corning Limited. Curable silox anol-silacyclobutane composition. 3,694,427, Cl. 260-18.00s.

Jones, Charles; and Berkowitz, Murray, to Curtiss-Wright Corporation. Multi-unit rotary mechanism. 3,694,113, Cl. 418-60.000.

Jones, Doyal H.; and Stiebel, Hanna. Motorcycle helmet communication system. 3,693,748, Cl. 181-20.000.

Jones, Howard W.; and Whitmore, Robert A. Collagen food coating composition and method of preparation. 3,694,234, Cl. 99-169.000.

Jones, Jack D., to National Can Retinning Company. Portable electric power apparatus. 3,694,729, Cl. 307-150.000.

Jones, John Leslie, Sr. Waste fluid flow control element. 3,693,622, Cl. 128-290.00r.

Jones, Nelson A., to Caterpillar Tractor Company. Vibration damper test machine. 3,693,402, Cl. 73-11.000.

Jordan, William E., to Xerox Corporation. Roller retraction mechanism in a multiple roller belt assembly. 3,694,068, Cl. 355-3.000.

Joseph, David J., Company, The: *See—*
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Josephsen, Roy C.; and Weir, Clifford L., to Allied Chemical Corporation. Method for molding articles. 3,694,529, Cl. 264-48.000.

Joubert, Alain Francois, to Societe Anonyme de Telecommunications. Circuit for testing a solar battery including a voltage source controlled by the battery's terminal voltage. 3,694,739, Cl. 324-29.500.

Joux, Jean-Louis Fernand; Mignot, Bernard Michel; and Billon, Michel Gaston Albert, to Fromageries Bel-La Vache Qui Rit. Process and apparatus for continuously separating and washing a coagulum and more particularly curd for making cheese and casein. 3,693256, Cl. 31-46.000.

Judd, Stanley: *See—*
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Julian, Robert A. Clamp for ensuring lateral contact between axial-post and laterally-constrictable connector. 3,694,798, Cl. 339-224.000.

Jung, Reinhold: *See—*
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Junger, Hans; and Weissenfels, Franz, to Dynamit Nobel Aktiengesellschaft. Phenolic resin foams. 3,694,387, Cl. 260-2.50f.

Jurny, Josef; and Janecek, Jaroslav, to Adamovske strojirny, narodni podnik. Mechanism for lateral orienting of paper sheets. 3,693,971, Cl. 271-59.000.

Juvonen, Toivo A.; and Robillard, Gene A., to Honeywell Inc. Variable temperature cooling apparatus. 3,693,374, Cl. 62-514.000.

Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft: *See—*
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Kabisch, Gerhard E.; and Raupach, Siegfried H. Oxidation-reduction regeneration of noble metal catalysts used in hydrogen peroxide production. 3,694,376, Cl. 252-413.000.

Kabushiki Kaisha Ricoh: *See—*
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Kaichi, Tetuo: *See—*
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Kalopissis, Gregoire; and Viout, Andre, to Societe Anonyme dite: L'Oreal. Waving hair with a water soluble thiol chain containing polymer and a water soluble disulfide. 3,693,633, Cl. 132-7.000.

Kalopissis, Gregoire; and Bugaut, Andree, to Societe Anonyme dite: L'Oreal. Dyeing human hair with N,N-diaryl alkylenediamine oxidation dye compositions. 3,694,138, Cl. 8-10.200.

Kalopissis, Gregoire; Bugaut, Andree; and Zorayan, Vahan, to L'Oreal. Method and composition containing nitroparaphenylene dyes for dyeing keratinic fibers. 3,694,140, Cl. 8-10.

Kalopissis, Gregoire; Abegg, Jean-Louis; Ghilardi, Giuliani; and Philippe de Beaulieu, Henri, to Societe Anonyme dite: L'Oreal. Method of hair conditioning. 3,694,141, Cl. 8-127.510.

Kalotay, Paul Zoltan, to International Telephone and Telegraph Corporation. Pulse frequency detector. 3,694,744, Cl. 324-78.00e.

Kalousek, George L.; and Enger, Phillip F., to United States of America, Interior. Apparatus for measuring thixotropy. 3,693,411, Cl. 73-59.000.

Kalousek, George L. Method for measuring thixotropy. 3,693,412, Cl. 73-59.000.

Kaloustian, Arpiar: *See—*
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Kanai, Hiroyuki; and Kojima, Tuneo. Spindle speed controlling device for ring spinning and twisting machines. 3,693,340, Cl. 57-93.000.
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Kanngiesser, Karl-Werner; and Kluge, Dietrich, to Aktiengesellschaft Brown, Boveri & Cie. Circuit arrangement for altering current distribution in mesh-operated high voltage direct current transmission networks. 3,694,728, Cl. 321-11.000.
Kapell, Gerhard; and Schummer, Anton. Method of detaching galvanically-produced sheets from master sheets. 3,693,236, Cl. 29-423.000.
Kaplan, Sam H., to Zenith Radio Corporation. Screening process for color cathode-ray tube. 3,693,223, Cl. 29-25.130.
Kaplow, Milton; and Halik, Joseph John, to General Foods Corporation. Stabilization of combined foods and liquids. 3,694,233, Cl. 99-150.000.
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Kasano, Hiroyuki; Kurata, Kazuhiro; Ogirima, Masahiko; Kawamura, Masao; and Kusumoto, Hazime, to Hitachi, Ltd. Solid state electronic device using quaternary compound semiconductor material consisting of gallium, indium, phosphor and arsenic. 3,694,759, Cl 330-4.900.
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Kastner, Arnold. Cigarette making machine. 3,693,630, Cl. 131-70.000.
Kasuga, Noboru, to Janome Sewing Machine Co., Ltd. Ornamental cam selecting device for zig zag sewing machine. 3,693,563, Cl. 112-158.00a.
Kasyanov, Grigory Ivanovich: *See*—
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Kawabe, Tsuneo; Sakakibara, Naoji; and Kawabata, Yasuhiro. Safety mechanism for brake holder of automotive hydraulic brake system. 3,694,039, Cl. 303-21.0cf.
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Keeler, Miner S., II; and Watt, William Doyle, Jr., to Keeler Brass Company. Remote control latch and recessed bail for the same. 3,694,017, Cl. 292-336.300.
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Ketterer, Stanley J., to Singer Company, The. Bobbin thread replenishing mechanism for sewing machines. 3,693,566, Cl. 112-184.000.
Kida, Nobutoshi; and Saito, Kazo. Rib assembly for folding umbrella. 3,693,642, Cl. 135-25.000.
Kidde, Gustave E. Preparation of monoammonium aluminum tetrafluoride. 3,694,150, Cl. 423-465.0on.
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King, Dean D., to Westinghouse Air Brake Company. Gear tooth deflection measuring machine. 3,693,431, Cl. 73-162.000.
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Kirsch, Jordan. Color display system utilizing plural birefringent elements having different retardances. 3,694,054, Cl. 350-157.000.
Kirschner, John G., to Mallory, P. R., & Co., Inc. Variable capacitance multilayered ceramic capacitor. 3,694,710, Cl. 317-261.000.
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Kleiman, Joseph P.; Malec, Robert E.; and Plonsker, Larry, to Ethyl Corporation. Ester lubricant. 3,694,382, Cl. 252-56.00s.
Klein, Bernard; and Searcy, Ronald Loy. Substrate and method for α-amylase assay. 3,694,318, Cl. .
Klein, Marvin Bertrand; and Silfvast, William Thomas, to Bell Telephone Laboratories, Incorporated. Broad spectrum selenium ion laser. 3,694,767, Cl. 331-94.500.
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Kliewer, George G., to Commodity Marketers, Inc. Temperature indicator. 3,693,579, Cl. 116-114.500.
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Knapp, Walter; and Ramsauer, Kurt, to Agfa-Gevaert Aktiengesellschaft. Photographic printer. 3,694,082, Cl. 355-97.000.
Kneisel, Joseph P. Lap assembly for roof ridge. 3,693,305, Cl. 52-276.000.
Knell, Martin; and Dexter, Martin. Thiodialkanoamidophenol antioxidants. 3,694,375, Cl. 252-402.000.
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Koenig, Robert H., to Tapeswitch Corporation of America. Cushion switch means. 3,694,600, Cl. 200-86.00r.
Koenig, Wolf M., to Kroitor, Roman and Affsil, A. Brom. Stroboscopic display. 3,694,062, Cl. 352-100.000.
Koett, Lee E. Golf practice device. 3,693,979, Cl. 273-195.00b.
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Le Troadec, Yves, to Rhone-Poulenc S.A. Method of fitting pressurized spraying containers. 3,694,534, Cl. 264-98.000.
Lebedeff, Yurii E.; and Klein, William C., deceased, to American Smelting and Refining Company. Process for de-copperizing lead. 3,694,191, Cl. 75-78.000.
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Lejon, Jean C., to Controle Bailey (Societe Anonyme). Arrangement for bumpless transfer of a control system from one mode to another. 3,694,633, Cl. 235-151.100.
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Lewis, J. Stephen; Collins, Harold B.; Sapkus, Jurgis; and Villanueva, Juanito O., to Mattel, Inc. Grasping hand for doll. 3,693,288, Cl. 46-119.000.
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Libby, Edwin L., to International Business Machines Corporation. Copying system featuring scanning illumination elements. 3,694,070, Cl. 355-8.000.
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Little, Donald R. Portable useful horsepower measuring instrument. 3,693,426, Cl. 73-133.000.
Little, Glen Melvon. Horse barn. 3,693,592, Cl. 119-16.000.
Livingston, William H. Neutralization of the systemic toxic principle in oak by feeding iron compounds. 3,694,549, Cl. 424-147.000.
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Llewelyn, David Myers, to International Nickel Company, Inc., The. Production of carbonyl iron. 3,694,187, Cl. 75-.5aa.
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Long, Wendell P., to Hercules Incorporated. Light activation of tetraalkylchromium compounds in polymerization of olefins. 3,694,422, Cl. 260-93.700.
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Martin, Robert L., to General Electric Company. Duplex locking receptacle. 3,694,790, Cl. 339-14.00r.

Martin, Sidney L. Hanger device useful in forming concrete structural slabs. 3,693,929, Cl. 249-25.000.

Martin, Thomas B. Fluid pressure system. 3,694,105, Cl. 417-26.000.

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May, Gerald L. Inflatable closure. 3,693,914, Cl. 244-102.00r.

May, Kurt; and Johannes, Gunter, to Continental Gummi-Werke Aktiengesellschaft. Pneumatic vehicle tire. 3,693,687, Cl. 152-209.000.

May, Randall L., to Coleman Company, Inc., The. Portable sanitary toilet. 3,693,193, Cl. 4-142.000.

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McCurry, Lala B. Spinning process for hair goods. 3,694,143, Cl. 8-158.000.

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McMurray, Peter H. Emergency reporting digital communications system. 3,694,579, Cl. 179-5.00r.

McNeil, John A. Flash economizer for variable loads. 3,693,324, Cl. 55-191.000.

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Miller, Eugene J., Jr.; Mais, Ago; Berenschot, Donald J.; and Berger, Robert L., to Armour Industrial Chemical Company. Epoxy resin cured with a fatty tetraamine. 3,694,409, Cl. 260-47.0en.
Miller, Harold N., to Esso Research and Engineering Company. Polymers comprising ethylene and ethylenically unsaturated dicarboxylic acids or esters thereof, and oil compositions containing said polymers. 3,694,176, Cl. 44-62.000.
Miller, Herman C. Concrete insert. 3,693,312, Cl. 52-699.000.
Miller, Marvin; Miller, Robert P.; and DeCholonoky, Tibor, Jr. Fingerprint identification system and method. 3,694,240, Cl. 117-.500.
Miller, Michael B., to General Motors Corporation. Single phase inverter control circuit. 3,694,714, Cl. 318-138.000.
Miller, Robert D. Method of separating water from a solution. 3,693,368, Cl. 62-58.000.
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Mingus, Alex W. Apparatus for assembling elongated components in side-by-side relation. 3,693,232, Cl. 29-211.00r.
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Minnesota Mining and Manufacturing Company: *See—*
Bohn, Arlin L., 3,693,900.
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Minowa, Tsutomu, to Hitachi, Ltd. AC generator directly coupled to an internal combustion engine. 3,694,661, Cl. 290-1.000.
Mirjanic, Milorad, to Daimler-Benz Aktiengesellschaft. Method for the manufacture of centrifugal castings. 3,694,194, Cl. 75-130.00r.
Mission Manufacturing Company: *See—*
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Mitsengendler, Iosif Salamonovich, to Uralsky Zavod Tyazhelogo mashinostroenia S. Ordzhonikidze. Turntable for fastening workpieces during machining. 3,693,965, Cl. 269-20.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
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Weinstein, Benjamin; and Rein, Burton Maxwell, 3,694,500.
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Moller, Friedrich; Hauptmann, Gunter; and Patzelt, Heinz-Wolfgang, to Farbenfabriken Bayer Aktiengesellschaft. Aliphatic polyamino ether compounds. 3,694,510, Cl. 260-584.00c.
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Monne, Maxine, to Sedimmec Societe d'Exploitation d'Inventions Metallurgiques Mecaniques et Chimiques. Method for assembling refractory metal rods in a heating system showing no overheated sections. 3,693,249, Cl. 29-611.000.
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Morgan, Thomas E., to International Telephone and Telegraph Corporation. Wire guide. 3,693,230, Cl. 29-203.000.
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Munawwar, Sheikh Mohammad, to Compac Corporation. Flame retardant fire barrier composition and laminant. 3,694,305, Cl. 161-205.000.
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Murphy, David M. Grain stirring apparatus. 3,693,944, Cl. 259-114.000.
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Murray, Brian L. Internal pads for rubber footwear. 3,693,270, Cl. 36-58.500.
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Nellen, Wilhelm; Sevenich, Theodor; and Wladika, Hans, to Hoesch Aktiengesellschaft. Rolling of metal ingots into bands. 3,693,393, Cl. 72-226.000.
Nelson, Herbert, to RCA Corporation. Method of making light emitting diode. 3,694,275, Cl. 148-171.000.
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Nieboer, Pieter Hendrik, to Demag Aktiengesellschaft. Charging device for a metallurgical furnace. 3,693,956, Cl. 266-27.000.
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Nisley, Larry V.; Mueller, Klaus P.; and Kreuter, Kenneth G., to Robertshaw Controls Company. Pneumatic control system. 3,693,706, Cl. 165-23.000.
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Nogues, Federico Sanfeliu. Yarn feeding method and apparatus for circular warp knitting machines. 3,693,378, Cl. 66-81.000.
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Odenthal, Conrad J.; and Hashizume, George K., to Tektronix, Inc. Electron beam deflection apparatus. 3,694,689, Cl. 315-3.000.
Oehl, Adolf, to General Motors Corporation. Selector levers for variable-ratio transmission of motor vehicles. 3,693,467, Cl. 74-473.00r.
Oehm, Otto, to Stahlwerke Bruninghaus Gesellschaft mit. Method and apparatus for the production of elongated conical metallic articles. 3,693,390, Cl. 72-107.000.
Oehmke, Richard W., to Minnesota Mining and Manufacturing Company. Use of chelates in preparing polycyanurates. 3,694,410, Cl. 260-47.00r.
Oetiker, Hans, to Gebruder Buhler AG. Method and apparatus for separating granular goods. 3,693,794, Cl. 209.000.
Ogasawara, Takeo: *See—*
Hikida, Ryotaro; and Ogasawara, Takeo, 3,693,765.
Ogawa, Mutsuo, to Kabushiki Kaisha Ricoh. System of reading out information upon recording medium in optical information reader. 3,694,629, Cl. 235-61.11e.
Ogirima, Masahiko: *See—*
Kasano, Hiroyuki; Kurata, Kazuhiro; Ogirima, Masahiko; Kawamura, Masao; and Kusumoto, Hazime, 3,694,759.
Oglesbee, Richard K., to Anchor Hocking Corporation. Sleeve package. 3,693,788, Cl. 206-65.00s.
Oglesbee, Richard K., to Anchor Hocking Corporation. Package for tumblers and the like. 3,693,830, Cl. 220-102.000.
Ohdachi, Yoshio: *See—*
Tatara, Seizo; and Ohdachi, Yoshio, 3,693,206.
Ohki, Masanaga: *See—*
Sakaguchi, Yoshikata; Sakai, Masakado; Ohki, Masanaga; Nakamura, Yashuharu; Tsubota, Motohiko; and Sato, Akira, 3,694,217.
Ohno, Junji, to Nippon Gakki Seizo Kabushiki Kaisha. Key guide for electronic musical instrument. 3,693,492, Cl. 84-436.000.
Ohotani, Hiroshi: *See—*
Azami, Kyoichiro; Ohotani, Hiroshi; and Fukutomi, Hiroshi, 3,694,383.
Ohtani, Takemitsu. Sea rescue ball unit. 3,693,202, Cl. 9-317.000.
Ohyama, Hideki, to Nippon Kogaku K.K. Instrument for observing colored bubble image. 3,694,090, Cl. 356-148.000.
Okamoto, Akio; and Uno, Taiko, to Mitsubishi Petrochemical Co., Ltd. Method and apparatus for coating with plastics. 3,694,538, Cl. 264-173.000.
Okano, Takeshi, to Fuji Shashin Film Kabushiki Kaisha. Magazine for card retrieval. 3,694,045, Cl. 312-186.000.
Okell, Roy E.: *See—*
Segel, Joseph M.; and Okell, Roy E., 3,693,315.
Okubo, Kinji; and Nagai, Toshihiko; deceased (by Nagai, Kenichi; legal representative). Reproduction process by powder development and fixation of transferred image. 3,694,203, Cl. 96-27.000.
Okumura, Takatosi: *See—*
Suzuki, Schoichi; and Okumura, Takatosi, 3,694,559.
O'Leary, Walter E.; and Thornton, Duane V., to ACF Industries, Incorporated. Flat car having a plurality of fixed intermediate bulkheads. 3,693,554, Cl. 105-366.00r.
Olin Corporation: *See—*
Haugwitz, Rudiger D.; and Uhoch, John, Jr., 3,694,553.
Olson, Donald O. Flow restrictor with flushing means. 3,693,657, Cl. 137-608.000.
Olson, Jack R., to United States of America, Navy. Electromagnetic flowmeter. 3,693,440, Cl. 73-194.00e.
Olson, James R.: *See—*
Merril, Stewart H.; and Olson, James R., 3,694,359.
Olympia Werke A.G.: *See—*
Thevis, Paul; and Schneider, Adolf, 3,693,871.
OMEGA Louis Brandt & Frere S.A.: *See—*
Cleusix, Willy, 3,693,344.
Omietanski, George M., to Union Carbide Corporation. Novel organofunctional silicon compounds substituted with halogen and processes for making same. 3,694,480, Cl. 260-448.20b.

Ono, Atsuo: *See*—
Toyooka, Tadao; Ueda, Hiromutsu; Nishida, Takeo; and Ono, Atsuo, 3,694,623.
Ono, Naoya: *See*—
Hashimoto, Hiroshi; Satou, Takehide; Sudo, Kengo; and Ono, Naoya, 3,694,092.
Ono, Shigeo: *See*—
Yamada, Takeo; and Ono, Shigeo, 3,693,518.
Onufer, George R., to Russell, Burdsall & Word Bolt and Nut Co. Fastener. 3,693,685, Cl. 151-21.00c.
Oosterveen, Lodewijk: *See*—
Pardoel, Machiel; and Oosterveen, Lodewijk, 3,694,222.
Oppermann, Willi: *See*—
Koch, Hans; Oppermann, Willi; and Pfeffer, Heinz, 3,694,617.
Optisonics Corporation: *See*—
Hirth, William R., 3,694,064.
Orlandini, Kent A., to United States of America, Atomic Energy Commission. Selective ion exchange for the isolation of certain alkaline earths. 3,694,369, Cl. 252-301.10r.
Orscheln Brake Lever Mfg. Company: *See*—
Hirst, Charles M., Jr.; and Lipshield, Eugene C., 3,693,472.
Ortel, William Charles Gormley, to Bell Telephone Laboratories, Incorporated. Electrooptic modulator utilizing phase retardation effect of internal reflections. 3,694,052, Cl. 350-150.000.
Ost, Walter; Thomas, Klaus; and Jerchel, Dietrich, to Boehringer, C. H., Sohn. 1-[(1'-Carboxylic acylamino-2',2',2'-trichloro) ethyl]-2-(hydrocarbyloxy-carbonyl-amino)-benzimidazoles. 3,694,454, Cl. 260-309.200.
Otake, Sugako: *See*—
Shimizu, Tetsuji; Yoshida, Takaomi; Otake, Sugako; Sumida, Hajime; and Ueno, Shinichi, 3,694,690.
Otani, Yasuhiko, to Kobe Steel, Ltd. Apparatus for continuously winding up a linear product such as wire. 3,693,898, Cl. 242-25.00a.
Otsuka, Ichiro: *See*—
Tsuruta, Masami; Ito, Shinji; and Otsuka, Ichiro, 3,694,522.
Otsuka, Shigenobu: *See*—
Fujino, Kiyoshi; Otsuka, Shigenobu; Kaichi, Tetuo; Sugiyama, Takaharu; and Tamura, Koji, 3,693,385.
Otte, Walter G. H. Flight path calculator. 3,693,873, Cl. 235-88.000.
Otterlet, Jon L. Slide switch with improved movable contact actuator resilient biasing means. 3,694,590, Cl. 200-16.00c.
Owen, William John: *See*—
Jonas, David Andrew; and Owen, William John, 3,694,427.
Owens-Corning Fiberglas Corporation: *See*—
Cunningham, Cecil R.; Beach, William R.; and Brinkley, Ray D., 3,693,338.
Gelin, Robert J., 3,694,541.
Owens-Illinois, Inc.: *See*—
Kennedy, Leo J., 3,694,609.
Weaver, Edward A., 3,694,360.
Ozaki, Nobuo, to Maeda Industries, Ltd. Bicycle gear shift lever. 3,693,469, Cl. 74-489.000.
Pabich, Richard W.; and Treiber, Richard W.; deceased (by Treiber, E. Louise; executrix). Wing headed fasteners and process for attaching same. 3,693,220, Cl. 24-221.00r.
Pabst Brewing Company: *See*—
Ziffer, Jack, 3,694,501.
Pacciarini, Antonio; and Pirovano, Dante, to Industrie Pirelli S.p.A., mesne. Apparatus for the manufacture of pneumatic tires. 3,694,290, Cl. 156-401.000.
Pagano, Joseph F., to Smith Kline & French Laboratories. Complexes of phosphanilic acid and α-amino-3-nitroacridine. 3,694,447, Cl. 260-279.00r.
Pagel, Dilip N.: *See*—
Lloyd, Norman E.; Lewis, Leonard T.; Logan, Robert M.; and Pagel, Dilip N., 3,694,314.
Paget, Birgitta Helena: *See*—
Skoldkvist, Helge Natanael; Skoldkvist, Hans Marten; and Paget, Birgitta Helena, 3,694,312.
Palmer, Oakley Butler; and Spencer, Paul E. Torque power wrench marking device. 3,693,483, Cl. 81-524.000.
Palmer, Patsy B.: *See*—
Iolnai, Julius L.; and Palmer, Patsy B., 3,693,663.
Palsson, Jan: *See*—
Wettlen, Roland; Melle, Hans-George; and Palsson, Jan, 3,693,640.
Palumbo, Henry Joseph, to Johns-Manville Corporation. Compressed asbestos sheet packing products and method. 3,694,304, Cl. 161-168.000.
Panesko, James V., to United States of America, Atomic Energy Commission. Process for palladium recovery. 3,694,370, Cl. 252-301.10r.
Panshin, Boris Mikhailovich: *See*—
Andreev, Pavel Alexeevich; Blinov, Konstantin Andreevich; Gremilov, Dmitry Ivanovich; Kanaun, Boris Izrailevich; Kanaev, Andrei Andreevich; Aslanian, Gurken Nazarovich; Paramonov, Pavel Mikhailovich; Panshin, Boris Mikhailovich; Sobolev, Sergei Petrovich; nd Shubenko-Shubin, Leonid Alexandrovich, 3,693,599.
Panson, Armand J.; and Ruka, Roswell J., to Westinghouse Electric Corporation. Homogeneous precipitation of alkaline-earth metal halophosphate phosphors. 3,694,371, Cl. 252-34.40p.
Papaioannou, Christos George, to American Cyanamid Company. Process for preparing a 1-(lower alkyl)-5-nitro-2-imidazolecarboximidate ester. 3,694,452, Cl. 260-309.000.
Paper Converting Machine Company: *See*—
Small, Rudolph Ernst, 3,694,300.
Paramonov, Pavel Mikhailovich: *See*—
Andreev, Pavel Alexeevich; Blinov, Konstantin Andreevich; Gremilov, Dmitry Ivanovich; Kanaun, Boris Izrailevich; Kanaev, Andrei Andreevich; Aslanian, Gurken Nazarovich; Paramonov, Pavel Mikhailovich; Panshin, Boris Mikhailovich; Sobolev, Sergei Petrovich; nd Shubenko-Shubin, Leonid Alexandrovich, 3,693,599.
Pardoel, Machiel; and Oosterveen, Lodewijk. Apparatus for aerating cattle sheds, particularly pigstics. 3,694,222, Cl. 98-33.00r.
Parker, Vernon D., to Dow Chemical Company, The. Electrolytic reduction of halogenated pyridines. 3,694,332, Cl. 204-73.00r.
Parker-Hannifin Corporation: *See*—
Ulanovsky, Jack M., 3,693,915.
Parola, Gary D., to Grove Valve and Regulator Company. Silent operating valve. 3,693,659, Cl. 137-625.300.
Pasbrig, Max. Make-and-break spark plug. 3,693,607, Cl. 123-143.00r.
Pater, Edward Henry, to Lucas, Joseph, (Industries) Limited. Electrical terminals assembly. 3,694,564, Cl. 174-72.00r.
Patmore, Edwin L., to Texaco Inc. Carboxylation process. 3,694,494, Cl. 260-514.00b.
Patmore, Edwin L., to Texaco Inc. Carboxylation process. 3,694,496, Cl. 260-515.00r.
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Podola, Nikolai Vasilievich; Bondarenko, Oleg Petrovich; Leibenzon, Semen Abramovich; Kaganovsky, Gary Petrovich; Smolyakov, Vadim Filimonovic; Eltsov, Konstantin Sergeevich; Gabuev, Georgy Kharitonovich; and Gladky, Dmitry Fedorovich. Installation for the electroslag remelting of consumable electrodes with modulated current. 3,693,700, Cl. 164-250.000.
Patzelt, Heinz-Wolfgang: *See*—
Moller, Friedrich; Hauptmann, Gunter; and Patzelt, Heinz-Wolfgang, 3,694,510.
Paucha, Gene, to Forr Company. Filter apparatus with removable filter elements. 3,693,328, Cl. 55-436.000.
Paul, Donald G., to Chemalytics Corporation. Gas analysis apparatus and method using paralle gas density detectors and different carrier gases to determine molecular weight. 3,693,403, Cl. 73-30.000.
Paulsen, Jens C. Wrist band with high resistance to expansion and relatively low contractive force. 3,693,375, Cl. 63-5.00r.
Pavon, Miguel Sancho: *See*—
Ducrot, Alain Jean Edmond; Poulain, Jacques Constant; Pavon, Miguel Sancho; and Turpin, Michel Louis, 3,694,333.
Pawletko, Joseph P.: *See*—
Abraham, Dennis G.; and Pawletko, Joseph P., 3,694,725.
Payson, Buford L., 25% to Strauss, Robert E. Carpet stretcher improvements. 3,693,936, Cl. 254-62.000.
Pearce, Brian: *See*—
Harding, Albert Frederick; Pearce, Brian; and Thomas, William Llewelyn, 3,693,455.
Pearl, David R., to Gerber Garment Technology, Inc. Apparatus for cutting sheet material. 3,693,489, Cl. 83-374.000.
Pearson, Johnnie Prine: *See*—
McGinley, William L.; and Pearson, Johnnie Prine, 3,693,452.
Pechthold, Heinz, to Etablissement Bonatex. Apparatus for the automatic continuous manufacture of filled and closed containers. 3,694,126, Cl. 425-326.000.
Pedersen, Johannes Sigurd, to Aarhus Metalemballage Industri. Method for producing cases having rounded sides and being open at both ends. 3,693,398, Cl. 72-368.000.
Pek, Inc., mesne: *See*—
Keller, Charles H., 3,694,081.
Penn Controls, Inc.: *See*—
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Pensa, Carlo. Hydraulic apparatus for regulating the flow of one or more pumps. 3,694,108, Cl. 417-222.000.
Pepmeier, Carl R.: *See*—
Sincavage, Joseph T.; Pepmeier, Carl R.; and Stoffregen, Louis E., 3,693,785.
Perkins, Gilbert Thornton: *See*—
Cooper, John Richard; and Perkins, Gilbert Thornton, 3,694,323.
Perrisini, Richard. Electrical component control device. 3,694,788, Cl. 338-180.000.
Perry, Robert D. O.; and Markiewicz, Joseph F. Slitted resilient closure having substantially rigid cap. 3,693,843, Cl. 222-212.000.
Persinos, Georgia J., to Amazon Natural Drug Company, The. Anti-inflammation compositions containing tospine or acid salts thereof and method of use. 3,694,557, Cl. 424-279.000.
Pesch, Albert Tho: *See*—
Reiners, Walter; Pesch, Albert Tho; and Bungter, Karl, 3,693,379.
Peschke, Karl, Kapilalverwaltungsgesellschaft Karl Peschke m.b.H.: *See*—
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Peters & Company, Inc.: *See*—
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Peters, Alfred; and Morelos, Salvador. Superfatted soap. 3,694,367, Cl. 252-121.000.
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Peterson, Norman L.: *See*—
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Petersson, Rolf: *See—*
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Petro, John D.; and Hodgson, Robert F., to Commercial Shering & Stamping Company. Hydraulic control circuits and apparatus. 3,693,350, Cl. 60-52.00r.
Petrolite Corporation: *See—*
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Petrov, Ivan Yordanov, to Nipkiem. Driving axle for electric vehicles. 3,693,745, Cl. 180-60.000.
Pezzarossi, John Joseph: *See—*
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Koch, Hans; Oppermann, Willi; and Pfeffer, Heinz, 3,694,617.
Pfisterer, Hermann; and Dietrich, Isolde, to Siemens Aktiengesellschaft. Hard superconductive materials and method of producing the same. 3,694,270, Cl. 148-11.50r.
Pfleger, Hans, to Deutsche Gold und Silber Scheideanstalt vormals Roessler. Process of making ammonium rhodanide (NH_4 SCN). 3,694,148, Cl. 23-75.000.
Philippe de Beaulieu, Henri: *See—*
Kalopissis, Gregoire; Abegg, Jean-Louis; Ghilardi, Giuliani; and Philippe de Beaulieu, Henri, 3,694,141.
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Phillips, Robert F., to Ethyl Corporation. Pipe saddle. 3,694,009, Cl. 285-197.000.
Phillips, Wendell Gary, to Monsanto Company. 2,6-Diorgano-1,5-dithia-2,6-diazacyclo octane-3,4,7,8-tetraones and their manufacture. 3,694,434, Cl. 260-239.30r.
Phillips, Wendell Gary. 4,4,8,8-Tetra chloro-2,6-diorgano-15-dithia-2,6-diazacyclo-octane-3,7-diones and their manufacture. 3,694,435, Cl. 260-239.30r.
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Piazze, Thomas E., to Continental Can Company, Inc. Apparatus for making heat sealed tubes. 3,694,289, Cl. 156-380.000.
Picard, Jean P.; and Voight, H. William, Jr., to United States of America, Army. Process and composition for use in munitions containing white phosphorus. 3,694,278, Cl. 149-29.000.
Piccagli, Ugo. Clam shell excavator. 3,693,274, Cl. 37-187.000.
Picchiottino, John B.: *See—*
Gray, Thomas J.; Picchiottino, John B.; and Hackett, Kenneth R., 3,694,574.
Pickering & Co., Inc.: *See—*
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Piedboeuf, Georges, to Bombardier Limited. Snowmobile ski leg. 3,693,992, Cl. 280-26.000.
Piekenbrink, Rolf; and Reinhardt, Albert. Pressure casting machine with pressure increase system. 3,693,702, Cl. 164-314.000.
Pierce, Chardo, Micronizing Company: *See—*
Pierce, Chardo W., 3,694,220.
Pierce, Chardo W., to Pierce, Chardo, Micronizing Company. Infrared radiation of seed. 3,694,220, Cl. 99-2.000.
Pierrot, Victor Charles, III, to Deere & Company. Delimbing and topping blade control linkage. 3,693,679, Cl. 144-2.00z.
Pilat, Michael J., to Battelle Development Corporation, The, mesne. Source test cascade impactor. 3,693,457, Cl. 73-432.0ps.
Pilipovich, Donald: *See—*
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Loubert, Donald W.; and Meyer, James A., 3,694,608.
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Piotrowski, Chester J. Edible ink. 3,694,237, Cl. 106-30.000.
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Podola, Nikolai Vasilievich: *See—*
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Podola, Nikolai Vasilievich; Bondarenko, Oleg Petrovich; Leibenzon, Semen Abramovich; Kaganovsky, Gary Petrovich; Smolyakov, Vadim Filimonovic; Eltsov, Konstantin Sergeevich; Gabuev, Georgy Kharitonovich; and Gladky, Dmitry Fedorovich, 3,693,700.
Pogonowski, Ivo C., to Texaco Inc. Water surface skimmer with check valve. 3,693,801, Cl. 210-242.000.
Poiter, Robert M.: *See—*
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Poole, John W.; Thorpe, Merle L.; and Vogel, Charles E., to Humphreys Corporation. High pressure thermal plasma system. 3,694,618, Cl. 219-121.00p.
Popp, William R., to Westinghouse Air Brake Company. Fail-safe time delay relay. 3,694,702, Cl. 317-141.00s.
Porta-Test Manufacturing Ltd.: *See—*
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Powell, Patrick L., to Stewart Warner Corporation. Speedometer and odometer assembly. 3,693,459, Cl. 73-490.000.
Powell, Thomas C.: *See—*
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Demarest, Henry M., Jr., 3,694,180.
Simon, Martin J., 3,694,239.
Wagner, William E., 3,694,299.
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Pre-Stress Concrete, Inc.: *See—*
Middleton, Thomas E., 3,693,310.
Preisendanz, Hans; and Schnegelsberg, Georg. Blast furnace tuyere. 3,693,961, Cl. 266-41.000.
Prelletz, Edward R., to Bell & Howell Company. Film convolution retaining device. 3,693,907, Cl. 242-197.000.
Pressman, Gerald L., to Electroprint, Inc. Electrostatic modulator for controlling flow of charged particles. 3,694,200, Cl. 96-1.00r.
Pressman, Jerome. Educational toy balloon systems. 3,693,266, Cl. 35-19.00r.
Pressman, Sidney, to Current Industries, Inc. Mercury vapor lamp with auxiliary light source. 3,694,692, Cl. 315-154.000.

Pretorius, Victor; and Hahn, Hans Helmuth. Chromatographic separation. 3,694,335, Cl. 204-180.00g.

Price, Rita L. Protective apron for container. 3,693,829, Cl. 220-90.000.

Price, William H., to Eastman Kodak Company. Modified triplets with reduced secondary spectrum. 3,694,057, Cl. 350-227.000.

Price-Pfister Brass Mfg., Co.: *See—*
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Purcell, Antionette M.; Thies, Curt; Bank, Morris I.; and Leffingwell, James W., to National Cash Register Company, The. Method of using display device utilizing polymer-polymer miscibilities. 3,694,246, Cl. 117-36.700.

Purt, Gustav; Bosshard, Walter; and Meier, Gerhard, to Cerberus AG. Apparatus for checking operation of smoke detectors. 3,693,401, Cl. 73-1.00r.

Puryear, David B.: *See—*
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Qonaar Corporation: *See—*
Dominick, George G.; Sciacero, Rinaldo; Weber, Leonard J.; Wimpffen, George I.; and Kardos, Theodore Louis, 3,693,870.

Quant, Donald J., to Xerox Corporation. Toner dispenser circuit for electrostatographic apparatus. 3,693,581, Cl. 118-7.000.

Quario, Gian Luigi, to Ghisalba S.p.A. Mutually insulated bridging contacts for heavy currents. 3,694,605, Cl. 200-166.00d.

Quarles, Richard W., Jr., to Du Pont de Nemours, E. I., and Company. Process for preparing perfluoro 3-phenoxypropionic acid. 3,694,499, Cl. 260-521.00a.

Quichaud, Claude: *See—*
Le Peuvedic, Jean Pierre; and Quichaud, Claude, 3,693,428.

Quick, George R.: *See—*
Eisenberg, Robert M.; and Quick, George R., 3,694,558.

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Quickle, Charles F., Jr.: *See—*
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Raasch, Maynard S.: *See—*
England, David C.; Raasch, Maynard S.; and Sheppard, William Arthur, 3,694,460.

Rabenhorst, David W., to Johns Hopkins University, The. Radial fluid bearing. 3,694,042, Cl. 308-36.300.

Racinez, Emilio A.: *See—*
McGwire, Thomas A.; and Racinez, Emilio A., 3,694,628.

Radke, Donald G., to Allied Chemical Corporation. Pressure relief panels for gas bag equipped vehicles. 3,694,003, Cl. 280-150.0ab.

Raikovsky, Jury Borisovich: *See—*
Andoniev, Sergei Mikhailovich; Gerber, Leonid Moiseevich; Kasyanov, Grigory Ivanovich; Kudinov, Gennady Alexandrovich; Kutsykovich, Dorina Borisovna; Nissenbaum, Tamara Izovna; Raikovsky, Jury Borisovich; Somchenko, Mikhail; and Filipiev, Oleg, 3,693,708.

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Ramsauer, Kurt: *See—*
Knapp, Walter; and Ramsauer, Kurt, 3,694,082.

Ramsay, Melvin Murray; and Barnes, William Geddes, to International Standard Electric Corporation. Automatic control circuit for image intensifier. 3,694,659, Cl. 250-213.0vt.

Rantsch, Kurt, to Zeiss-Stiftung, Carl, d/b/a Zeiss, Carl. Device for determining guidance errors. 3,694,089, Cl. 356-138.000.

Ranz, Erwin: *See—*
Matejec, Reinhart; and Ranz, Erwin, 3,694,207.

Ranz, Erwin; Von Rintelen, Harald; Schutz, Heinz-Dieter; Muller, Gerhard; and Neumann, Wolfram, to Agfa-Gevaert Aktiengesellschaft. Process for the production of photographic images or printing plates utilizing polyimides. 3,694,208, Cl. 96-48.0hd.

Raphael, Nathaniel W. Stringed instruments with adjustable frictional gripping means for the string supporting pins. 3,693,490, Cl. 84-202.000.

Rauch, David, to Brode, Von, Milling Co., Inc. Display rack. 3,693,808, Cl. 211-181.000.

Raupach, Siegfried H.: *See—*
Kabisch, Gerhard E.; and Raupach, Siegfried H., 3,694,376.

Rausch, Richard E., to Universal Oil Products Company. Hydrocarbon isomerization process with a rhenium-tin catalyst. 3,694,347, Cl. 208-134.000.

Raviv, Josef: *See—*
Loh, Louis S.; Mommens, Jacques H.; and Raviv, Josef, 3,694,813.

Ray, Ralph D. Rotary actuator. 3,694,782, Cl. 335-230.000.

Raytheon Company: *See—*
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RCA Corporation: *See—*
Carlson, David John, 3,694,756.
Nelson, Herbert, 3,694,275.
Saxena, Arjon Nath, 3,694,719.

Redden, Robert Francis, to Cominco Ltd. Method of producing zinc alloy. 3,694,199, Cl. 75-178.00c.

Redmer Sons Co.: *See—*
Redmer, Wilbert William, 3,693,815.

Redmer, Wilbert William, to Redmer Sons Co. Method for orienting a rod or tube having a beveled end. 3,693,815, Cl. 214-152.000.

Redmore, Derek, to Petrolite Corporation. Corrosion inhibitor of dihydro-aromatic nitrogen-heterocyclic phosphonates. 3,694,144, Cl. 21-2.700.

Reed, Jerry L.: *See—*
Versaw, Edward F.; Moe, Herbert C.; and Reed, Jerry L., 3,693,880.

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Reese Products, Inc.: *See—*
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Reese, Robert P.: *See—*
Good, Arthur L.; and Reese, Robert P., 3,694,006.

Reeve, Darrel Lon; and Mortensen, Stanley, to Georgia-Pacific Corporation. Roll coating apparatus for panel products. 3,693,585, Cl. 118-104.000.

Regie Nationale des Usines Renault: *See—*
Colinet, Andre; and Mercier, Jacques, 3,693,532.

Rehrig, Houston. Repairable plastic and wire crate. 3,693,823, Cl. 220-4.00r.

Reichard, William H.: *See—*
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Reid, Alexander Arthur Luttrell. Group communication apparatus. 3,694,578, Cl. 179-1.0cn.

Reid, Philip L.; and Holcombe, Edward L., to Grace, W. R., & Co. Closing system for bags and the like. 3,693,314, Cl. 53-22.00b.

Reiland, William H., Jr.: *See—*
Griffith, John Q., III; William, Edward S.; and Reiland, William H., Jr., 3,694,363.

Rein, Burton Maxwell: *See—*
Weinstein, Benjamin; and Rein, Burton Maxwell, 3,694,500.

Reiners, Walter; Pesch, Albert Tho; and Bungter, Karl, to Schlafhorst, W., & Co. Method of operating a warp knitting machine. 3,693,379, Cl. 66-84.000.

Reinhard, Behn; Heinrich, Gottlob; Hoyler, Gerhard; and Hartmut, Kessler, to Siemens Aktiengesellschaft. Front contacted electrical component. 3,693,244, Cl. 29-492.000.

Reinhardt, Albert: *See—*
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Rekesius, John F.: *See—*
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Remmer, Norton S. Wood grinding. 3,693,891, Cl. 241-15.000.

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Republic Steel Corporation: *See—*
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Rgawa, Shinichiro; and Fukuda, Ryuhei, to Honeywell Inc. Manual-automatic change-over device for pneumatic controller. 3,693,645, Cl. 137-86.000.

Rhodenizer, Harold L.: *See—*
Grunwald, John J.; Rhodenizer, Harold L.; and Slominski, Leo J., 3,694,250.

Rhone-Poulenc S.A.: *See—*
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Nouvel, Jacques, 3,694,511.

Ribbels, Hendrik; and Lefferts, Johannes. Method for the connection of the ends of belts. 3,694,282, Cl. 156-157.000.

Rich, Archie G. Anti-litter peanut sales bag. 3,693,868, Cl. 229-56.000.

Rich, Theodore A., to Environment/One Corporation. Mixing type condensation nuclei meter. 3,694,085, Cl. 356-37.000.

Richard, Eugene D.: *See—*

Richard, George E.; and Richard, Eugene D., 3,693,195.

Richard, George E.; and Richard, Eugene D. Apparatus for surf generator. 3,693,195, Cl. 4-172.160.

Richardson, Thomas F., Jr. Photographic method of design synthesis and evaluation. 3,694,205, Cl. 96-27.00r.

Richman, Douglas A., to General Motors Corporation. Fuel tank having bellows for control of fuel evaporation. 3,693,825, Cl. 220-26.00r.

Richmond, Albert R., to Richmond Manufacturing Company, The. Boring auger for horizontal earth boring machine. 3,693,734, Cl. 175-122.000.

Richmond Manufacturing Company, The: *See*—
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Richter, Guenther, to Gelsenberg Beazin Aktiengesellschaft. Fractional desublimation. 3,693,707, Cl. 165-39.000.

Richter, John Edward; and Tiura, George Olavi, to Agmac, Inc. Windrow leaf scavenger. 3,693,331, Cl. 56-13.200.

Richter, Lothar; and Eichhorn, Georg. Film support coated with polyester and gelatin-silver halide emulsion. 3,694,212, Cl. 96-87.00r.

Ricoh Co., Ltd.: *See*—
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Rigby, Colin William; and Stark, Bernard Peter, to Ciba-Geigy AG. Solid polymers from oxazol-5-one and a bis-maleimide. 3,694,417, Cl. 260-78.0ua.

Riley, Terry E.: *See*—
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Ringer, Richard M.: *See*—
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Rising, Bradley D.: *See*—
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Roach, John R.: *See*—
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Roaf, Robert; and Wright, John Thomas Matthew. Device for correcting scoliotic curves. 3,693,616, Cl. 128-69.000.

Robertshaw Controls Company: *See*—
Fox, Raymond J., 3,693,874.
Nisley, Larry V.; Mueller, Klaus P.; and Kreuter, Kenneth G., 3,693,706.

Robertson, H. H., Company: *See*—
Dereich, John E.; Gleeson, James E.; and Earle, Glenn J., 3,693,548.

Robertson, Mark Christian; and Bishop, Donald Lloyd, to Globe-Union Inc. Method of providing environmental protection for electrical circuit assemblies. 3,693,252, Cl. 29-627.000.

Robillard, Gene A.: *See*—
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Robins, A. H., Company, Incorporated: *See*—
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Robinson, Charles W.; Merklin, Kenneth E.; and Finlayson, Francis D., to Marcona Corporation. Method and apparatus for loading slurries into vessels and eliminating the suspending liquid. 3,693,795, Cl. 210-83.000.

Robinson, Eugene S.: *See*—
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Robinson, Stuart A., to Robinson Thread Co., Inc., The. Bobbin. 3,693,906, Cl. 242-159.000.

Robinson Thread Co., Inc., The: *See*—
Robinson, Stuart A., 3,693,906.

Robrecht, Charles J.; and Wyman, John S., Jr., to Bendix Corporation, The, mesne. Disposable air sampling filter cassette. 3,693,410, Cl. 73-28.000.

Rockford Servo Corporation: *See*—
Bonner, William A., 3,693,855.

Rod, Vladimir; Bazant, Vladimir; and Sir, Zdenek, to Ceskoslovenska akademie ved. Method of preparing ammonium terephthalate by isomerization, or disproportionation of potassium salts derived from benzene-carboxylic acids. 3,694,497, Cl. 260-515.00p.

Rogers, Stanley, to General Dynamics Corporation. Matrix switching system having iteratively terminated transmission line. 3,694,775, Cl. 333-7.000.

Roggero, Arnaldo: *See*—
Cesca, Sebastiano; Roggero, Arnaldo; and Marconi, Walter, 3,694,420.

Rohm and Haas Company: *See*—
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Rohrig, Herbert; and Loy, Fritz, to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Method of making a retractile cord. 3,694,279, Cl. 156-50.000.

Rollmann, Kent W.; and Wood, Harold V., to Phillips Petroleum Company. Diamine salts of dicarboxylic acids as additives for block polymers. 3,694,523, Cl. 260-880.00b.

Rolls-Royce Limited: *See*—
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Rondas, Ivan V.; and Christy, Mark H., to Sub' Terrain Irrigation Co. Fluid emitter. 3,693,888, Cl. 239-535.000.

Roon, Kenneth E.: *See*—
Tinghitella, Michael J.; and Roon, Kenneth E., 3,694,238.

Rosch, Hans Michael; and Limberger, Ernst, to Landis & Gyr. Quick-acting electric switch. 3,694,597, Cl. 200-67.00d.

Rosemount Engineering Company: *See*—
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Rosinski, Werner K.: *See*—
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Ross, Albert, to Harris Calorific Company. Electrically ignited gas torch with shut-off valve and latch therefor. 3,694,134, Cl. 431-255.000.

Rossbach, Donald W.; and Etes, Donald E., to Zoo-Lab, Inc. Fishing tools. 3,694,014, Cl. 289-17.000.

Rossi, Albert: *See*—
McDougall, Lee A.; Rossi, Albert; and Wisotsky, Max J., 3,693,720.

Roth, Johann, to Niezoldi & Kromer GmbH. Transporting mechanism for motion picture film. 3,694,065, Cl. 352-195.000.

Roth, Willi; and Schenk, Otto Erwin, to Geigy, J. R., A.-G. Three-phase aerosol spraying system. 3,694,545, Cl. 424-45.000.

Roth, Willi; and Schenk, Otto Erwin, to Geigy, J. R., A-G. Two-phase aerosol spraying system. 3,694,546, Cl. 424-45.000.

Rotter, Friedrich, to Siemag Siegener Maschinenbau, G.m.b.H. Spoked wheel conveying device. 3,693,397, Cl. 72-342.000.

Rous, Pierre. Sectional shelving. 3,693,556, Cl. 108-109.000.

Roussel-Uclaf: *See*—
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Rowley, David S.; and Lapp, William A., to Christensen Diamond Products Company. Roadway paint stripe grooving machine. 3,694,033, Cl. 299-39.000.

Rowley, John C.: *See*—
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Roy, Edmond A.; Coolbaugh, James C.; Norris, Wayne D.; and Arm, Herbert G., to United States of America, Navy. Formaldehyde gas generator/disseminator. 3,694,146, Cl. 21-119.000.

Rozema, Arthur L.; Brady, Lynn J.; and Barden, Wayne A., to CTS Corporation. High voltage resistor. 3,694,786, Cl. 338-256.000.

Rubens, Louis C.; and Woo, James T. K., to Dow Chemical Company, The. Interpolymers of aliphatic conjugated dienes and blocked vinyl isocyanates. 3,694,416, Cl. 260-77.5tb.

Rubinstein, Joan: *See*—
Waddington, Rogor Strange; and Duval, Bruce, 3,693,264.

Rubio, Manuel Jesus, to Barrera, Roberto Gonzalez. Tortilla and process using polycarboxylic acids and their anhydrides. 3,694,224, Cl. 99-80.00r.

Rucker Company, The: *See*—
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Ruggiero, John J., 10% to Lee, Raymond, Organization, Inc., The. Computer game. 3,693,975, Cl. 273-130.0ab.

Ruhl, Charles A. L.; Meyer, Edward; and Chatterjea, Probir K., to International Harvester Company. Hydrostatic transmission control with hydraulic follow-up. 3,693,503, Cl. 91-368.000.

Ruka, Roswell J.: *See*—
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Rumbaugh, James T.: *See*—
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Rumsey, Rollin Douglas. Reentry centrifugal pump/mixers. 3,694,101, Cl. 415-52.000.

Runevall, Agar Evald; and Hansson, Bror. Process in continuous extrusion of metals and the like. 3,693,394, Cl. 72-262.000.

Runkle, Dean E., to Bendix Corporation, The. Frictionless pressure seal. 3,693,654, Cl. 137-596.000.

Rupp, David J.: *See*—
Stout, Daniel W.; and McGinnes, Henry M, 3,693,718.

Ruske, Manfred, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Process for the production of 4-chloro-6,7-phthalogiquinazoline derivatives. 3,694,443, Cl. 260-251.00q.

Ruskin, Bernard J.: *See*—
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Russakoff, Robert S.; De Luca, Carlo Bruno; Schenker, Henry; Henchcliffe, Alfred L.; and Williams, Dennis C., to Burndy Corporation. Arc testing device. 3,694,694, Cl. 315-194.000.

Russell, Burdsall & Word Bolt and Nut Co.: *See*—
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Rylander, Paul N.; Karpenko, Irene M.; and Pond, George R., to Engelhard Minerals & Chemicals Corporation. Selective hydrogenation of nitroaromatics to the corresponding N-arylhydroxylamine. 3,694,509, Cl. 260-578.000.

S.A. Des Anciens Etablissements Paul Wurth: *See*—
Mahr, Rene N.; and Legille, Edouard, 3,693,812.

Saadeh, Fuad T. Angular accelerometer. 3,693,460, Cl. 73-516.000.

Saar, Robert P., to Pratt, Henry, Company. Positively oriented, adjustable length, buried valve operator and indicator support. 3,693,647, Cl. 137-363.000.

Sabi, Nestor, to Edwards Engineering Corporation. Apparatus for controlling pressure in a well. 3,693,732, Cl. 175-25.000.

Sacks, Barry H., to United States of America, National Aeronautics and Space Administration. Magnetically actuated tuning method for gunn oscillators. 3,694,771, Cl. 331-107.00g.

Sade, Martin. Motor driven aquatic device. 3,693,577, Cl. 115-70.000.

Sagusa, Hisayuki; Takeuchi, Seiji; and Arikawa, Yoshijiro, to Hitachi, Ltd. Process for analysis of amino acids by liquid chromatography and color developing medium adapted therefor. 3,694,160, Cl. 23-230.00r.

Saikawa, Isamu; Matubara, Yasumasa; and Hori, Takako, to Toyama Chemical Co., Ltd. Substituted 2-(benzenesulfonamido)-dyrimidines. 3,694,436, Cl. 260-240.00d.

Sailer, Siegfried: *See—*
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Saito, Nagao; and Koike, Kazushige, to Mitsubishi Denki Kabushiki Kaisha. Process for preparing a metal mold by electrical machining. 3,694,610, Cl. 219-69.00m.

Saito, Tadao: *See—*
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Sakabe, Yuzuru: *See—*
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Sakaguchi, Yoshikata; Sakai, Masakado; Ohki, Masanaga; Nakamura, Yashuharu; Tsubota, Motohiko; and Sato, Akira, to Fuji Photo Film Co., Ltd. Silver halide photographic emulsion. 3,694,217, Cl. 96-130.000.

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Sakamaki, Hisashi; Kimura, Yoshimasa; Sawamura, Osamu; and Sugiura, Susumu, to Canon Kabushiki Kaisha. Electrophotographic apparatus. 3,693,969, Cl. 271-57.000.

Sakamoto, Kenro: *See—*
Iwama, Masakuni; Inoue, Isaburo; Hanzawa, Teruo; Sakamoto, Kenro; and Endo, Takaya, 3,694,214.

Salonen, Albert R. Motorized shearing implement. 3,693,254, Cl. 30-228.000.

Salotti, Charles A. Reduction process for removing iron from spodumene. 3,694,189, Cl. 75-21.000.

Salyer, Ival O.; and Jefferson, Robert T., to United States of America, Atomic Energy Commission. Process for open-cell rigid polyurethane foams. 3,694,385, Cl. 260-2.50a.

Salzmann, Ferdinand F., to Consolidated Foods Corporation. Traverse assembly for draperies and the like. 3,693,696, Cl. 160-345.000.

Sample, Thomas E., Jr.; and Tate, Jack F. Process for paraffin removal from hydrocarbon-bearing formations. 3,693,719, Cl. 166-304.000.

Sana Products, Inc.: *See—*
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Sanders Associates, Inc.: *See—*
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Young, Donald S.; and Fricke, William C., 3,694,768.

Sanderson, George H., Jr. Snap-on spanner wrench. 3,693,484, Cl. 81-90.00c.

Sandvikens Jernverks Aktiebolag: *See—*
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Lewis, J. Stephen; Collins, Harold B.; Sapkus, Jurgis; and Villanueva, Juanito O., 3,693,288.

Sassin, Wolfgang, to Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung. Duct system for low-temperature fluids and thermally isolated electrical conductors. 3,693,648, Cl. 137-375.000.

Sato, Akira: *See—*
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Sato, Shui; Nakajima, Tomio; Nakano, Masashi; and Sugita, Sadao, to Konishiroku Photo Industry Co., Ltd. Organic materials containing UV-absorbers. 3,694,211, Cl. 96-84.000.

Satou, Takehide: *See—*
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Saucy, Gabriel: *See—*
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Sauder, Kenneth D. Rotary engine. 3,693,601, Cl. 123-8.410.

Sauer, Theo, to Agfa-Gevaert Aktiengesellschaft. Device for adding and distributing a liquid or a gas in other media. 3,693,656, Cl. 137-604.000.

Saul, George: *See—*
De Pierre, Vincent; Male, Alan T.; and Saul, George, 3,693,419.

Saumsiegle, Robert W.; and Segmuller, Bruno J., to Rucker Company, The. Injection blow molding equipment. 3,694,124, Cl. 425-242.000.

Sauter Packaging Company: *See—*
Nichols, Matthew, 3,694,295.

Savit, Carl H., to Western Geophysical Company of America. Method for measuring the characteristics of mechanical-to-electrical transducers. 3,693,400, Cl. 73-1.000.

Savory Equipment, Inc.: *See—*
Carville, James G.; and Rekesius, John F., 3,693,536.

Sawada, Eiji, to Denki Onkyo Company, Limited. Toroidal type deflection coils for cathode ray tubes. 3,694,781, Cl. 335-210.000.

Sawamura, Osamu: *See—*
Sakamaki, Hisashi; Kimura, Yoshimasa; Sawamura, Osamu; and Sugiura, Susumu, 3,693,969.

Sawayama, Takehiro: *See—*
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Sawtelle, Donald W.: *See—*
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Sawyer, Edgar W., Jr.; and Dzierzanowski, Frank J. Paper containing electroconductive pigment and use thereof. 3,694,202, Cl. 96-1.800.

Saxena, Arjon Nath, to RCA Corporation. Schottky barrier diode. 3,694,719, Cl. 317-234.00r.

Sayles, David C., to United States of America, Army. Polyurethane propellant composition containing isodecyl orthoformate. 3,694,277, Cl. 149-19.000.

Scallan, John Patrick. Cover-lock for containers. 3,694,016, Cl. 292-200.000.

Scarrott, Gordon George, to International Computers Limited. Linear motors for head actuators. 3,694,678, Cl. 310-13.000.

Schack, Carl J.; Pilipovich, Donald; and Wilson, Richard D., to North American Rockwell Corporation. Synthesis of chlorine and bromine perchlorate. 3,694,172, Cl. 23-367.000.

Scharf, Herbert D. Double end terminal attachment device. 3,693,231, Cl. 29-203.00d.

Scharfenberger, Franz: *See—*
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Scheibling, Robert, to Siamp-Cedap, Societe Anonyme Monegasque. Slot die for the production of multi-layer laminates. 3,694,119, Cl. 425-131.000.

Scheinberg, Israel Herbert. Filters and carbon monoxide indicators. 3,693,327, Cl. 55-274.000.

Schenk, Otto Erwin: *See—*
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Scheuerle, Willy. Driving device for heavy motor-trucks. 3,693,741, Cl. 180-23.000.

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Schindler, Ted; and Dumler, Henry. Therapeutic pool. 3,693,194, Cl. 4-172.170.

Schippers, Heinz; Hensen, Friedhelm; and Jung, Reinhold. Extrusion head for producing a multi-layer blown tubular film. 3,694,292, Cl. 156-501.000.

Schlafhorst, W., & Co.: *See—*
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Schlinger, Warren G.; Slater, William L.; and Dille, Roger M., to Texaco Inc. Production of reducing gas. 3,694,373, Cl. 252-373.000.

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Schmermund, Alfred. Machines for wrapping block-line articles. 3,693,316, Cl. 53-52.000.

Schmidt, Johan Machiel: *See—*
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Schmoyer, Arthur R. Light bar indicator for keyboard teaching devices. 3,693,493, Cl. 84-479.000.

Schmunk, John D., to Hancock Brick & Tile Company, The. Modular cellular conduit assembly. 3,693,664, Cl. 138-111.000.

Schnapper, Melvin: *See—*
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Schnegelsberg, Georg: *See—*
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Schneider, Adolf: *See—*

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Schneider, Theodor; Schubert, Karl-Friedrich; and Jakob, Heinz. Motor vehicle windshield wiper having a parking position outside the wiping area. 3,694,723, Cl. 318-443.000.

Scholl, Hans-Joachim; and Klauke, Erich, to Farbenfabriken Bayer Aktiengesellschaft. Process for the preparation of perfluoro-2,5-diazahexa12,4-diene. 3,694,507, Cl. 260-566.00d.

Schon, Kenneth A. Exercise apparatus and method for paralytic patients. 3,693,614, Cl. 128-25.000.

Schott, Charles W. Method for making spherical beads. 3,694,528, Cl. 264-8.000.

Schreinemakers, Josephus. Method to determine the correct depth of the lingual rim of a bite plate during the construction of a denture for a toothless mandible, or to check the correctness of the depth of the lingual rim of a lower denture as well as a plte-shaped registering element adapted to be used in this method. 3,693,257, Cl. 32-19.000.

Schubert, Karl-Friedrich: *See*—
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Schuhrke, Donald K., to Stewart-Warner Corporation. Alternator driven tachometer. 3,694,750, Cl. 324-173.000.

Schuierer, Manfred, to Bruckner-Apparatebau Michelstadt GmbH. Apparatus and methods for applying liquids to fabrics. 3,694,142, Cl. 8-151.000.

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Schumag Schumacher Metallwerke Gesellschaft mit beschrankter Haftung: *See*—
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Schwarz, Eckhard C. A., to Kimberly-Clark Corporation. Method for producing paper-like polymer film and the product. 3,694,399, Cl. 260-41.00b.

Schwarzkopf, August, to Windmoller & Holscher. Handle-type carrying bag made of plastics material sheeting. 3,693,867, Cl. 229-54.00r.

Schwerdtfeger, Gunter; and Kammerling, Bruno. Adjustable impact casing for a shaft furnace. 3,693,952, Cl. 263-29.000.

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Seidler, David, to Menley & James Laboratories. Powder or cream dispenser with self-contained applicator. 3,694,096, Cl. 401-127.000.

Seki, Nagataka, to Tokyo Shibaura Electric Company, Ltd. Inverter device. 3,694,727, Cl. 321-5.000.

Seltzer, Harry, to Myles, Lee, Corporation. Indicating device for engines. 3,693,448, Cl. 73-344.000.

Semi-Conductor Electronic Memories Incorporated: *See*—
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Sersale, Riccardo; Franco, Enrico; Jello, Rosario; and Colella, Carmine, to Snam Progetti, S.p.A. Process for producing synthetic zeolite. 3,694,152, Cl. 423-329.0on.

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Seyferth, Dietmar; Hopper, Steven P.; and Darragh, Kird V., to Massachusetts Institute of Technology. Method for making organo (fluoromethyl) mercury compounds. 3,694,477, Cl. 260-433.000.

Seyl, Robert G. Method of measuring accelerated corrosion rate. 3,694,324, Cl. 204-1.00t.

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Siebers, Aloysius F. Front wheel mounting for bicycles. 3,694,004, Cl. 280-277.000.

Siegal, Burton L., to American Cutting & Binding Co. Flagging roll holder and dispenser. 3,693,853, Cl. 225-58.000.

Siegel, Matthew. Fluid distribution apparatus preserving alignment of longitudinal axes of flow. 3,693,531, Cl. 98-40.00c.

Siegel, Sidney. Disposable food-vending package. 3,694,235, Cl. 99-171.00b.

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Sprave, Klaus: *See—*
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Sprow, Frank B.; and Keller, John E., to Esso Research and Engineering Company. Catalytic liquefaction of coal using synthesis gas. 3,694,342, Cl. 208-10.000.

Square D Company: *See—*
Stanback, Harris I., 3,694,701.

Squibb, E. R., & Sons, Inc.: *See—*
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Staar, Theophiel Clement Jozef Ludewijk, to Staar, S.A. Anti-vibration device for tape transports. 3,693,908, Cl. 242-198.000.

Stabler, Theodor. Developing apparatus. 3,693,526, Cl. 95-93.000.

Stabler, Theodor, to Autopan Heimerdinger & Stabler o.H.G. Developing apparatus. 3,693,529, Cl. 95-93.000.

Stafford, John Neville. Beds. 3,693,200, Cl. 5-68.000.

Stahl, Frederick J., to Curtiss-Wright Corporation. Finned tube and method of manufacture. 3,693,713, Cl. 165-184.000.

Stahlwerke Bruninghaus Gesellschaft mit: *See—*
Oehm, Otto, 3,693,390.

Staker, William C., Jr., to General Motors Corporation. Single pulse test circuit. 3,694,667, Cl. 307-232.000.

Stamm, Walter: *See—*
Sorstokke, Harold E.; Stamm, Walter; and Uhing, Eugene H., 3,694,527.

Stanback, Harris I., to Square D Company. Insulating base, plug-on bus bar and connector assembly for circuit breaker panelboard. 3,694,701, Cl. 317-118.000.

Standard Brands Incorporated: *See—*
Lloyd, Norman E.; Lewis, Leonard T.; Logan, Robert M.; and Pagel, Dilip N., 3,694,314.

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Stanfield, Howard E.; Stanfield, Gary W.; and Camp, George F., to Acme Products Incorporated. Floating surface skimmer. 3,693,800, Cl. 210-242.000.

Starita, Joseph M.; and Macosko, Christopher W. Force measuring apparatus. 3,693,425, Cl. 73-133.000.

Stark, Bernard Peter: *See—*
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Starr, George N. Dispensing device for salt and the like. 3,693,840, Cl. 222-193.000.

Stasio, Robert. Baby saver for tropical fish. 3,693,591, Cl. 119-3.000.

Statham Instruments, Inc.: *See—*
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Stauffer Chemical Company: *See—*
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Steigelman, James Q., to Chace, W. M., Company. Method and apparatus for cladding metals. 3,693,243, Cl. 29-487.000.

Stein, Robert, to Nash Engineering Company. Ejector apparatus and method of utilizing same. 3,694,107, Cl. 417-167.000.

Steinberg, David H.: *See—*
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Steingroever, Eric, to Magnetfabrik Bonn GmbH vorm. Gewerkschaft. Molding apparatus for making anisotropic ring-shaped magnets with zones having a preferred radial direction. 3,694,115, Cl. 425-5.00h.

Steinhiser, Paul F. Two wheel roller skate. 3,693,988, Cl. 280-11.230.

Stepanov, Evgeny Alexeevich: *See—*
Kotov, Evgeny Pavlovich; Legostov, Viktor Vladimirovich; Stepanov, Evgeny Alexeevich; Chuchalov, Alexandr Mikhailovich; Maiorov, Nikolai Kuzmich; Merezhko, Gennady Pavlovich; Komarov, Anatoly Semenovich; and Sosnitsky, Nikolai Georgievich, 3,694,570.

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Stevens, Charles H., to Sybron Corporation. Adjustable shim for pressure vessel doors. 3,694,145, Cl. 21-91.000.

Stewart, Robert C.: *See—*
Emanuelson, Roger C.; Stewart, Robert C.; and Vine, Raymond W., 3,694,310.

Stewart, Stanly J. Holder for temporarily restraining and suspending a live animal. 3,693,595, Cl. 119-98.000.

Stewart, Walter N.; and Tatu, William J., to United States of America, Army. Artillery gun shock simulator. 3,693,432, Cl. 73-167.000.

Stewart Warner Corporation: *See—*
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Stewart-Warner Corporation: *See—*
Schuhrke, Donald K., 3,694,750.

Stiebel, Hanna: *See—*
Jones, Doyal H.; and Stiebel, Hanna, 3,693,748.

Stigger, Earl K. Pollution control device. 3,693,883, Cl. 239-423.000.

Stockton, Thomas Rowe, to Ford Motor Company. Spur drive for regenerator-type heat exchanger. 3,693,703, Cl. 165-8.000.

Stoeck, Georg: *See—*
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Stoffregen, Louis E.: *See—*
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Stotz, Robert B. Multizone air conditioning and ventilating unit. 3,693,705, Cl. 165-22.000.

Stout, Daniel W.; and McGinnes, Henry M, 10% each to Washburn, Paul C., Rupp, David J., Latimer, Erwin D. and McGinnes, Henry. Laser beam device and method for subterranean recovery of fluids. 3,693,718, Cl. 166-302.000.

Stout, Perry R.: *See—*
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Stover ompany, The: *See—*
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Strauss, Robert E.: *See—*
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Streel, Dominique Thomas Francois: *See—*
Delcour, Leon Joseph Eugene; and Streel, Dominique Thomas Francois, 3,693,582.

Strenglein, Harry F., to Sperry Rand Corporation. Vehicle tire pressure monitor system. 3,694,803, Cl. 340-58.000.

Stroezel, Reinhold. Percussion and rotary drilling machine. 3,693,728, Cl. 173-13.000.

Stromberg-Carlson Corporation: *See—*
Budrys, Ignas; and Lee, Ernest O., Jr., 3,694,583.

Struble, Glenn E., to Diamond International Corporation. Shipping carton for fragile articles and blank for producing the same. 3,693,866, Cl. 229-39.00b.

Stuart, James L., to Dart Industries, Inc. Die for impregnating and coating filamentary material. 3,694,131, Cl. 425-461.000.

Studer, Philip A., to United States of America, National Aeronautics and Space Administration. Electric motive machine including magnetic bearing. 3,694,041, Cl. 308-10.000.

Sub'Terrain Irrigation Co.: *See—*
Rondas, Ivan V.; and Christy, Mark H., 3,693,888.

Suchy, Jan S. Electromagnetically propelled stirrer and shaker. 3,693,941, Cl. 259-1.000.

Sudo, Kengo: *See—*
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Sugita, Sadao: *See—*
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Edigarian, Zorab Parnakovich; Kudinov, Evgeny Ivanovich; and Sukhov, Vladimir Evgenievich, 3,693,730.

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Erlykin, Ivan Ivanovich; Vasin, Alexandr Ivanovich; Korotkov, Mikhail Mikhailovich; Maximov, Vadim Yakovlevich; Matveev, Ivan Ivanovich; Kadyshev, Vladimir Alexandrovich; Volkov, Valentin Vladimirovich; Firsel, Vladlen Borisovich; Bulatkin, Vladimir Dmitrivich; Malekhanov, Igor Evgenievich; and Suldin, Stanislav Nikolaevich, 3,693,570.

Sullivan, Robert J., to Caterpillar Tractor Company. Scraper apron for improved closing in rock. 3,693,273, Cl. 37-129.000.

Sulzer Brothers Limited: *See—*
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Sumida, Hajime: *See—*
Shimizu, Tetsuji; Yoshida, Takaomi; Otake, Sugako; Sumida, Hajime; and Ueno, Shinichi, 3,694,690.

Sumikama, Sadao, to Showa Denko K.K. Radiant heat flow meter. 3,693,447, Cl. 73-341.000.

Sumitomo Electric Industries, Ltd.: *See—*
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Summers, Stanley E., to Ametek, Inc. Pressure relief device. 3,693,691, Cl. 152-427.000.

Sun Oil Company: *See—*
Griffith, John Q., III; William, Edward S.; and Reiland, William H., Jr., 3,694,363.

Sundberg, Erik Gustav, to Akitebolaget Tudor. Sheath for lead-acid storage battery. 3,694,265, Cl. 136-63.000.

Sunn, George M.: *See—*
Witt, Allan E.; and Sunn, George M., 3,694,669.

Suntester Limited: *See—*
Marten, John Anthony; and Gee, Bernard Arthur, 3,693,422.

Surmatis, Joseph Donald, to Hoffmann-La Roche Inc. Novel diketo coloring agents. 3,694,491, Cl. 260-488.00r.

Suzuki, Schoichi; and Okumura, Takatosi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic, musical instrument employing variable resistor fingerboards. 3,694,559, Cl. 84-1.010.

Svenska Industrietablering Saktiebolaget: *See—*
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Svenska Traforskningsinstitutet: *See—*
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Swenson, Kenneth S.: *See—*
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Swift & Company: *See—*
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Swinbank, Everett John: *See—*
Ackermann, Harry John; Blessin, Louis Dewey; Hermann, Leroy Nicholas; Ririe, Max Henry; and Swinbank, Everett John, 3,693,593.

Swinhoe, Ronald; and Hamer, Allan Norman, to United Kingdom Atomic Energy Authority. Cold traps for liquid metal. 3,693,959, Cl. 266-37.000.

Swords, Ben B.: *See—*
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Sybron Corporation: *See—*
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Sydenham, Leonard: *See—*
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Sylvania Electric Products, Inc.: *See—*
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Sylvester, John F.: *See—*
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Symons Corporation: *See—*
Shoemaker, James C., 3,693,928.

Syntex Corporation: *See—*
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Szilagyi, John: *See—*
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T. I. (Group Services) Limited: *See—*
Whittington, Keith Richard, 3,693,415.

Tadie, Andre Francis. Motion-pictures projection device. 3,694,060, Cl. 352-14.000.

Takahashi, Kensaku; and Yoshida, Kenichi, to Japanese National Railways. Induction radio transmission system. 3,694,751, Cl. 325-51.000.

Takahashi, Kunio, to Toyoda Koki Kabushiki Kaisha. Electrolytic grinding machine. 3,694,340, Cl. 204-224.000.

Takahashi, Mitsuo; Ito, Koui; and Kaga, Sadao, to Hitachi Powdered Metals Co., Ltd. Powder compacting device for forming helical gear compact. 3,694,127, Cl. 425-352.000.

Takashi, Yukichi: *See—*
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Takeda Chemical Industries, Ltd.: *See—*
Noguchi, Shunsaku; Kishimoto, Shoji; and Kawai, Kiyohisa, 3,694,456.

Takeda, Tsukasa: *See—*
Ikeda, Yoneichi; Takeda, Tsukasa; Hattori, Michio; Kiyomiya, Yutaka; and Yamamoto, Takashi, 3,694,322.

Takeuchi, Seiji: *See—*
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Takkunen, Philip D., to Minnesota Mining and Manufacturing Company. Composite metal structure useful in sound absorption. 3,693,750, Cl. 181-33.00g.

Talavera, Jorge Cervantes: *See—*
Guardado, Jose Cavazos; Talavera, Jorge Cervantes; and Ibarra, Alcibiades Gonzalez, 3,693,723.

Tamura, Koji: *See—*
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Tanguay, Jean-Paul, to Placements Jean-Paul Tanguay Ltee. Oscillating tandem wheels. 3,693,743, Cl. 180-24.05s.

Tani, Eiji. Centrifugal clutch. 3,693,772, Cl. 192-105.0cd.

Tanura, Yuichi: *See—*
Toda, Kazuo; Murai, Tosuke; Miura, Chikatoshi; and Tanura, Yuichi, 3,694,196.

Tapeswitch Corporation of America: *See—*
Koenig, Robert H., 3,694,600.

Tatara, Seizo; and Ohdachi, Yoshio. Car washing device. 3,693,206, Cl. 15-21.00d.

Tate, Jack F.: *See—*
Sample, Thomas E., Jr.; and Tate, Jack F., 3,693,719.

Tatu, William J.: *See—*
Stewart, Walter N.; and Tatu, William J., 3,693,432.

Tavernier, Georges L. P.; and Dubois, Robert L., to Usinor. Roll for displacement of bar-like products. 3,693,779, Cl. 198-41.000.

Taylor, Brian William: *See—*
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Taylor, Kenneth O.: *See—*
Lawhon, Charles P.; Taylor, Kenneth O.; and Brock, Jerry A., 3,693,951.

Taylor, Lloyd D., to Polaroid Corporation. Tetrahydro 1,3-oxazinium compounds. 3,694,439, Cl. 260-244.00r.

Teagarden, Raymond E. Trailer stand for installing automobile muffler. 3,693,818, Cl. 214-506.000.

Teague, Loy P., to Texaco Inc. Method and apparatus for avoiding water pollution at an offshore drilling site. 3,693,733, Cl. 175-66.000.

Teasdale, Max J.: *See—*
Moser, Raymond L.; and Teasdale, Max J., 3,693,680.

Technitrend, Inc.: *See—*
Wood, Stanley J., 3,694,811.

Techue Systems Incorporated: *See—*
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Tektronix, Inc.: *See—*
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Telefonaktiebolaget LM Ericsson: *See—*
Collin, Rolf Henrik; Kjallstrom, Arne Rudolf; and Thysk, Rune Nils Anders, 3,694,783.

Tellson, Joseph W., to General Motors Corporation. Retaining ring and cage for unit assembly of tapered bearing components. 3,694,043, Cl. 308-214.000.

Temple, Ernest E.: *See—*
Giebel, Joseph L.; and Temple, Ernest E., 3,693,862.

Tenkumo, Shohei; and Kuramoto, Yoshio, to Minolta Camera Co., Ltd. Automatically winding type photographic camera with a rotary shutter. 3,693,523, Cl. 95-31.0ez.

Ter Haar, Leonard W.: *See—*
Visser, Pieter; and Ter Haar, Leonard W., 3,694,355.

Terayama, Fusaji, to Morita Fire Pump Mfg. Co., Ltd. Device for preventing falling down of lifter of fire fighting ladder-equipped vehicle. 3,693,755, Cl. 182-102.000.

Terry, Arthur John: *See—*
Horsewell, Henry George; and Terry, Arthur John, 3,693,369.

Tetra Pak International AB: *See—*
Wettlen, Roland; Melle, Hans-George; and Palsson, Jan, 3,693,640.

Texaco, Inc.: *See—*
Dancy, Julian H.; and Morrison, John A., 3,694,135.
Flournoy, Norman E.; Dancy, Julian H.; and Trippet, Raymond, 3,694,136.
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Howe, Ralph S., Jr., 3,693,226.
Textronix, Inc.: *See—*
McAllister, John H., 3,694,291.
Thauer, Peter, to Volkswagenwerk Aktiengesellschaft. Throttle valve mounting for exhaust gas line. 3,693,935, Cl. 251-305.000.
Theoclitus, Gregory, to Air Preheater Company, Inc. Ash removal system. 3,693,558, Cl. 110-8.00r.
Thevis, Paul; and Schneider, Adolf, to Olympia Werke A.G. Apparatus for preventing printing of zeros above the highest order of a printed number. 3,693,871, Cl. 235-60.280.
Thien, Gerhard; and Fachbach, Heinz, to List, Hans. Internal combustion engine with sound-proofing casing. 3,693,602, Cl. 123-41.700.
Thierer, Walther, to Hofele, Adolf, Firma. Memory board. 3,693,580, Cl. 116-134.000.
Thies, Curt: *See—*
Purcell, Antionette M.; Thies, Curt; Bank, Morris I.; and Leffingwell, James W., 3,694,246.
Thillet, Georges. Receptacle designed to withstand an internal pressure. 3,693,822, Cl. 220-3.000.
Thiokol Chemical Corporation: *See—*
West, Denny M., 3,693,831.
Thoennes, Edward R. Livestock confinement area. 3,693,782, Cl. 198-224.000.
Thomas, Alan F.: *See—*
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Thomas Electronics Limited: *See—*
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Thomas, Klaus: *See—*
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Thomas, William Llewelyn: *See—*
Harding, Albert Frederick; Pearce, Brian; and Thomas, William Llewelyn, 3,693,455.
Thompson, Francis I., to Westinghouse Electric Corporation. Dual answer mode teaching system. 3,693,268, Cl. 35-48.00r.
Thompson, John T.; and Gillemot, George W. Pressure equalizing accessory installable along the top side of electrical cables. 3,694,566, Cl. 174-135.000.
Thompson, Richard L., to General Electric Company. Lamp support device. 3,694,649, Cl. 240-153.000.
Thornton, Duane V.: *See—*
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Thorpe, Merle L.: *See—*
Poole, John W.; Thorpe, Merle L.; and Vogel, Charles E., 3,694,618.
Thrap, Guy A., to California Instruments Co. Method and circuit for providing a frequency meter having improved gate period means. 3,694,745, Cl. 324-78.00d.
Thysk, Rune Nils Anders: *See—*
Collin, Rolf Henrik; Kjallstrom, Arne Rudolf; and Thysk, Rune Nils Anders, 3,694,783.
Ticknor, Raymond G., to Xerox Corporation. Speed control apparatus. 3,694,712, Cl. 318-7.000.
Tidd, James A.: *See—*
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Tien, Ping King: *See—*
Bergman, John George, Jr.; McFee, James Hoffman; and Tien, Ping King, 3,694,055.
Tierney, John Robert, to Sperry Rand Corporation. Lubricating device for electric dry shaver. 3,693,758, Cl. 184-102.000.
Tiger Products, Inc.: *See—*
Fisher, James E.; Mitchell, Jack L.; and Wisdom, Gerald F., 3,693,918.
Tillett, Thomas J.; and Straus, Barry, to FMC Corporation. Shrouded drum skimmer. 3,693,805, Cl. 210-519.000.
Tinger, Harold G.; and Colombo, Edward A., to Mobil Oil Corporation. Blends of low density polyethylene and butene/ethylene copolymers and high tear strength blown film made therefrom. 3,694,524, Cl. 260-897.00a.
Tinghitella, Michael J.; and Roon, Kenneth E., to International Business Machines Corporation. Gravure printing process and apparatus using moisture-setting inks. 3,694,238, Cl. 106-30.000.
Titangesellschaft mbH: *See—*
Hilgers, Giovanni; Hitzemann, Gerhard; and Kulling, Achim, 3,694,168.
Titus, Jack B. Integrated flight data air navigation computer system. 3,693,872, Cl. 235-78.000.
Tiura, George Olavi: *See—*
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Honda, Kiyoshi; Miyazaki, Mitsumasa; Nomura, Shozaburo; Akiyama, Kazuo; and Hirose, Kazutoyo, 3,694,415.
Tobey, Stephen W.; and Lourandos, Marilyn Z. Direct nitration of alkylphenols with nitric acid. 3,694,513, Cl. 260-622.00n.
Tobin, Benjamin F., III, to Air Intake Renu. Method for inspecting filters. 3,693,406, Cl. 73-38.000.
Toda, Kazuo; Murai, Tosuke; Miura, Chikatoshi; and Tanura, Yuichi, to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha and Nihon Boshoku Kogy Kabushiki Kaisha. Aluminum alloy for galvanic anode. 3,694,196, Cl. 75-146.000.
Togel, Kurt: *See—*
Hoetzel, Hubert; and Togel, Kurt, 3,694,635.
Tokeda Chemical Industries, Ltd.: *See—*
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Tokyo Gas Company Limited: *See—*
Yamagishi, Kazuo, 3,693,409.
Tokyo Shibaura Electric Co., Ltd.: *See—*
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Nakamura, Masakatsu; Yonezawa, Toshio; Kato, Taketoshi; Watanabe, Masaharu; and Akatsuka, Minoru, 3,694,707.
Tokyo Shibaura Electric Company, Ltd.: *See—*
Seki, Nagataka, 3,694,727.
Tolman, Thomas William Charles, to Brown and Williamson Tobacco Corporation. Tobacco-smoke filter. 3,693,632, Cl. 131-266.000.
Tomiati, Umberto. Hair curl setting and drying device. 3,693,636, Cl. 132-33.00r.
Tomy Kogyo Co., Ltd.: *See—*
Aoki, Masaru, 3,693,291.
Tonka Corporation: *See—*
Adickes, Cecil F., 3,693,282.
Tonsfeldt, Wayne S. Diverging tool mounts having a plurality of aperatures for lateral adjustment of the tools. 3,693,725, Cl. 172-655.000.
Toperzer, John W.; Neogi, Shibendra P.; and Beachy, Dale K., to Koppers Company. Cooling bed. 3,693,954, Cl. 266-2.00r.
Topol, George J. Apparatus for adding material to liquids. 3,693,797, Cl. 210-96.000.
Torrey, Anthony J. Material spreader attachment for trucks. 3,693,890, Cl. 239-668.000.
Totuus Communications Inc.: *See—*
Hanna, Drexel W., Jr., 3,694,757.
Touchette, Albert Francis, to Plastic Coating Corporation, The. Apparatus for prewetting photoelectrostatic offset masters. 3,694,071, Cl. 355-15.000.
Toutain, Gerard Roland L. Electrical commutating switches with ball bridging contacts. 3,694,589, Cl. 200-11.00a.
Toyama Chemical Co., Ltd.: *See—*
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Toyo Koatsu Industries, Incorporated: *See—*
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Toyo Kogyo Co., Ltd.: *See—*
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Toyo Soda Manufacturing Co., Ltd.: *See—*
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Toyoda, Eiji; Noguchi, Masaaki; and Ito, Osamu, to Nippondenso Kabushiki Kaisha and Toyota Jidosha Kogyo Kabushiki Kaisha. Automatic transmission system having a variable speed changing point. 3,693,479, Cl. 74-731.000.
Toyoda Koki Kabushiki Kaisha: *See—*
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Toyooka, Tadao; Ueda, Hiromutsu; Nishida, Takeo; and Ono, Atsuo, to Matsushita Electric Industrial Co., Ltd. Surface heater for a toaster. 3,694,623, Cl. 219-200.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
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Trautman, Robert D., to Boeing Company, The. Retractable cargo securing device. 3,693,920, Cl. 248-119.00r.
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Trepka, William J.; and Sonnenfeld, Richard J. Halphenyllithium initiators for conjugated diene polymerization. 3,694,515, Cl. 260-665.00r.
Trezzini, Henri Louis; and Czaryski, Norbert, to B.C.T.I. Bureau de Coordination de Travaux Industrialises, S.a.r.L. Building construction. 3,693,308, Cl. 52-293.000.
Trick, Robert E., to Bucyrus-Erie Company. Multiple fulcrum valve operating lever. 3,693,474, Cl. 74-522.000.
Triplett, Milton J., to United States of America, Air Force. Natural circulation liquid pumping system in plume pumping system for test engines. 3,693,423, Cl. 73-117.100.
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Tritt, Paul G.; and Buza, Michael J. Valve mechanism for ice removal system. 3,693,916, Cl. 244-134.00a.
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Tromp, Gerardus M. Closet seat. 3,693,198, Cl. 4-246.000.
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Tsuruta, Masami; Ito, Shinji; and Otsuka, Ichiro, to Mitsui Toatsu Chemicals, Incorporated. Process for producing aromatic vinyl polymer compositions. 3,694,522, Cl. 260-878.00r.
Tsypin, Nekhemian Veniaminovich: *See—*
Vereschagin, Leonid Fedorovich; Yakovlev, Evgeny Nikolaevich; Konyaev, Jury Sergeevich; Polyakov, Evgeny Valentinovich; Novikov, Albert Pavlovich; Bakul, Valentin Nikolaevich; Skripko, Gely Fomich; and Tsypin, Nekhemian Veniaminovich, 3,694,177.
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Ube Industries Ltd.: *See—*
Fujino, Kiyoshi; Otsuka, Shigenobu; Kaichi, Tetuo; Sugiyama, Takaharu; and Tamura, Koji, 3,693,385.
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National Aeronautics and Space Administration; Acting Administrator; with respect to an invention of:
Ambruso, Alex. Gas operated actuator. 3,693,346, Cl. 60-36.000.
Anderson, Tage O. Digital slop threshold data compressor. 3,694,581, Cl. 179-15.55r.
Brown, George A.; and Harfap, Victor. Integrated circuit including field effect transistor and cerment resistor. 3,694,700, Cl. 317-101.00a.
Mitchell, Drury K. Borescope with variable angle scope. 3,694,094, Cl. 356-241.000.
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Van de Water, Francis M. Vehicle top boat loader and carrier. 3,693,817, Cl. 214-450.000.
van den Kroonenberg, Henricus Hubertus, to N.V. Industrielle Handelscombinatie. Equipment for moving step by step a structure for carrying out operations supported on a sea-bed or the like. 3,693,363, Cl. 61-46.500.
Van Der Linde, John R.; and Fairey, Lyle W., to General Electric Company. Contactless direct current motor reversing circuit. 3,694,715, Cl. 318-139.000.
Van Norman, Gilden R.: *See—*
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Van Run, Adrianus Martinus Jacobus Gerardus: *See—*
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Van Winsen, Friedrich H., to Daimler-Benz Aktiengesellschaft. Rear axle suspension of motor vehicles. 3,694,000, Cl. 280-124.00r.
Vandenberg, Edwin J.; and Willis, William D., to Hercules Incorporated. Dimensional stabilization of wool. 3,694,258, Cl. 117-141.000.
Vanderschueren, Emile, to European Atomic Energy Community (Euratom). Vapor deposition apparatus. 3,693,583, Cl. 118-49.500.
Vando, Yasuo: *See—*
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Vangraafeiland, Wesley H., to Eastman Kodak Company. Modified triplets with reduced secondary spectrum. 3,694,058, Cl. 350-227.000.
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Veerling, Crenraad W. N.; and Grossen, Victor A., to Shell Oil Company. Pipeline for the transport of gold liquids. 3,693,665, Cl. 138-149.000.

Vereinigte Drahtwerke A.G.: *See—*
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Vereinigte Osterreichische Eisen- und Stahlwerk Aktiengesellschaft: *See—*
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Vernon Tool Co., Ltd.: *See—*
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Versaw, Edward F.; Moe, Herbert C.; and Reed, Jerry L., to United States of America, Navy. Infrared suppressor means. 3,693,880, Cl. 239-127.300.

Veschuroff, William C.; and Mustoe, Robert M., to United States Gypsum Company. Decorated gypsum board and method of making same. 3,694,298, Cl. 161-43.000.

Vester, Rudolph P. Shaker. 3,693,943, Cl. 259-56.000.

Vetco Offshore Industries, Inc.: *See—*
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Vetter, Hans-Joachim, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the polymerization of olefins. 3,694,421, Cl. 260-88.20r.

Vezzani, Pompeo. Method for making dough. 3,694,227, Cl. 99-90.0cb.

Vickers, Edward Jervis: *See—*
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Vine, Raymond W.: *See—*
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Violleau, Andre; and Coffy, Rene Louis, to Societe Nationale Industrielle Aerospatiale. Apparatus for impregnating fabrics, more particularly glass cloths, with plastics. 3,693,317, Cl. 53-111.00r.

Viout, Andre: *See—*
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Visser, Bauke: *See—*
Kuiper, Adrianus; Brouns, Jan Willem; and Visser, Bauke, 3,694,688.

Visser, Pieter; and Ter Haar, Leonard W., to Shell Oil Company. Process for the removal of solid particles from aqueous suspensions. 3,694,355, Cl. 210-21.000.

Vlach, Thomas L.: *See—*
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Vladimir, Svaty, to Elitex, Zavody textilniho strojirenstvi Generalvi reditelstvi. Pneumatic weft delivery means for shuttleless looms. 3,693,668, Cl. 139-127.00p.

Vock, Manfred: *See—*
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Vodinh, Hien. Repeating type rubber band projecting pistol. 3,693,609, Cl. 124-19.000.

Vogel, Charles E.: *See—*
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Voight, H. William, Jr.: *See—*
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Volpe, Jean: *See—*
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Von Obstfelder, Heinz-Jurgen. Fluid stream sensing device. 3,693,441, Cl. 73-208.000.

Von Rintelen, Harald: *See—*
Ranz, Erwin; Von Rintelen, Harald; Schutz, Heinz-Dieter; Muller, Gerhard; and Neumann, Wolfram, 3,694,208.

Vornberger, Karl F., to Kamborian, Jacob S. Swinging cement applying mechanism. 3,693,878, Cl. 239-97.000.

Vortex Air Corporation: *See—*
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Voss, Eitel: *See—*
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Andoniev, Sergei Mikhailovich; Gerber, Leonid Moiseevich; Kasyanov, Grigory Ivanovich; Kudinov, Gennady Alexandrovich; Kutsykovich, Dorina Borisovna; Nissenbaum, Tamara Izovna; Raikovsky, Jury Borisovich; Somchenko, Mikhail; and Filipiev, Oleg, 3,693,708.

Waclawiczek, Herbert V., to Vereinigte Osterreichische Eisen- und Stahlwerk Aktiengesellschaft. Continuous casting plant for continuously casting hot liquid metals. 3,693,701, Cl. 164-260.000.

Waddington, Rogor Strange; deceased (by Sharp, David Buckley; and Rubinstein, Joan; executors); and Duval, Bruce, to T.P.I. Limited. Simulating apparatus for teaching the art of sailing. 3,693,264, Cl. 35-11.000.

Wagle, Joseph A., to General Motors Corporation. Ring testing machine. 3,693,424, Cl. 73-120.000.

Wagner, Charles J.: *See—*
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Wagner, David P., to Illinois Tool Works Inc. Composite screw. 3,693,495, Cl. 85-9.00r.

Wagner, Frank Albert, Jr.: *See—*
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Wagner, William E., to PPG Industries, Inc. Multiple glazed unit and method of manufacture. 3,694,299, Cl. 161-45.000.

Wakai, Shuzo; and Nabae, Mitsuo, to Matsushita Electronics Corporation. Emitter coupled multivibrator with means for preventing generation of high frequency noise. 3,694,774, Cl. 331-113.00r.

Wakamiya, Kinji; and Kobayashi, Isamu, to Sony Corporation. Method of making integrated circuits employing selective gold diffusion thru polycrystalline regions. 3,694,276, Cl. 148-174.000.

Wakefield, Frederick W., to United States Steel Corporation. Apparatus for locating conductor discontinuity in semi-conducting shielded cable. 3,694,736, Cl. 324-51.000.

Wakefield, Norman; Alexander, Stuart; Morrish, James Francis; Beck, William; Groves, Raymond Sturgis; and Harvey, Michel J., to Wates Limited. Pre-cast concrete panels. 3,693,930, Cl. 249-83.000.

Wald, Herbert; Young, Harold K.; and Blanch, William O., to Bethlehem Steel Corporation. Component annealing base. 3,693,955, Cl. 266-5.00b.

Walker, Howard B.: *See—*
Needham, Donald G.; Walker, Howard B.; and Myers, Luther O., Jr., 3,694,543.

Walker, James Donald, to Chicago Bridge & Iron Company. Air-lift pump with scalloped air-liberation rings, at two levels. 3,694,106, Cl. 417-109.000.

Walker, Patrick J., to Kinkead Industries, Incorporated. Ladder stabilizer. 3,693,756, Cl. 182-129.000.

Wall-Able Manufacturing Corporation: *See—*
Wallo, William H., 3,694,792.

Wallach, Karl-Erhard: *See—*
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Wallo, William H., to Wall-Able Manufacturing Corporation. Electrical terminal clamp. 3,694,792, Cl. 339-97.00r.

Walls, Patrick Joseph. Internal combustion engine or compressor. 3,694,109, Cl. 417-261.000.

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Walton, George N., to Bridge, David, & Company. Apparatus for the production of sheets of plastics or like materials. 3,694,120, Cl. 425-145.000.

Waltronic Company: *See—*
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Walworth, Vivian K.: *See—*
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Gerber, Arthur M.; and Walworth, Vivian K., 3,694,253.

Ward, Edward J.; and Way, Rodney, to Worcester Valve Company Limited, The. Servo-systems. 3,693,501, Cl. 91-186.000.

Ward, Michael Henry Evans. Battery economy apparatus. 3,694,755, Cl. 325-392.000.

Ward, Raymond: *See—*
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Warner-Lambert Pharmaceutical Company: *See—*
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Washburn, Paul C.: *See—*
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Watanabe, Masaharu: *See—*
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Watanabe, Tamotsu; Vando, Yasuo; and Tsurugi, Kozaburo, to Nippon Kogei Kogyo Co., Ltd. Device for spraying liquid. 3,693,882, Cl. 239-296.000.

Wates Limited: *See—*
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Watson, Gerard L.; and Latshaw, Don, to Marvue, Inc. Veneer inspection system. 3,694,658, Cl. 250-219.0df.

Watson, John, to Monarch Western Equipment Ltd. Automobile conveyor. 3,693,392, Cl. 104-172.00b.

Watt, William Doyle, Jr.: *See—*
Keeler, Miner S., II; and Watt, William Doyle, Jr., 3,694,017.

Wattenburg, Willard Harvey. Tennis stroke training device. 3,693,973, Cl. 273-73.00r.

Way, Rodney: *See—*
Ward, Edward J.; and Way, Rodney, 3,693,501.

Weaver, Edward A., to Owens-Illinois, Inc. Ferrimagnetic glass-ceramics. 3,694,360, Cl. 252-62.590.

Weber, Franz: *See—*
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Weber, Heinz, to Bremshey & Co. Collapsible umbrella. 3,693,643, Cl. 135-26.000.

Weber, Leonard J.: *See—*
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Weber Marking Systems, Inc.: *See—*
Larson, Leonard G.; Anderson, Bror E.; and Schick, Margery L., 3,694,244.

Weber, Paul E. Multiple lenslet copier. 3,694,076, Cl. 355-50.000.

Weber, Wilbert D.; and Ashton, Robert, to Massey-Ferguson Industries Limited. Self propelled sweet corn harvester. 3,693,330, Cl. 56-12.800.

Weck, Edward & Company, Inc.: *See—*
Hoef, William A., 3,694,280.

Wedco, Inc.: *See—*
Feder, Friedhelm R., 3,694,037.

Wei, Peter H. L. 2-Substituted -3a,4,5,6,7,7a-hexahydro-5a,6,7,8,9,9a-hexahydro-9 a-hydroxypyrido (2,1-b) benzothiazolium halides. 3,694,449, Cl. 260-294.80b.

Wei, Peter H. L., to American Home Products Corporation. 2-Substituted -4,5,6, 7-tetrahydrobenzothiazole-4-carboxylic acids and their alkyl esters. 3,694,450, Cl. 260-294.80c.

Weinberg, Alan E.: *See—*
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Weingarten, Irving R., to Cambridge Instrument Company, Inc. Chemical detector. 3,694,338, Cl. 204-195.00r.

Weinland, Stuart L.; and Coletti, Donn K. Core removal. 3,694,264, Cl. 134-22.00r.

Weinstein, Benjamin; and Rein, Burton Maxwell, to Mobil Oil Corporation. Catalytic oxidation of polymethylstilbene compounds. 3,694,500, Cl. 260-524.00r.

Weinstein, Daniel. Tilting chair mechanism. 3,693,925, Cl. 248-378.000.

Weir, Clifford L.: *See—*
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Weishaupt, Max, GmbH: *See—*
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Weishaupt, Siegfried: *See—*
Genannt, Wilhelm; Brodlin, Willi; and Weishaupt, Siegfried, 3,693,887.

Weiss, Martin. Selective button holding attachment for sewing machines. 3,693,560, Cl. 112-114.000.

Weissenfels, Franz: *See—*
Junger, Hans; and Weissenfels, Franz, 3,694,387.

Weitz, Otto, to Troster, A. J. Sowing device with pneumatic seed separator. 3,693,833, Cl. 221-211.000.

Wells, Wallace N. Lure retreiver. 3,693,277, Cl. 43-17.200.

Wenger, Helmut: *See—*
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Wennerberg, Arnold N., to Standard Oil Company. Hydrodesulfurization with hydrogen transfer catalyst and an alkaline composition. 3,694,350, Cl. 208-212.0.

Wenschhof, David E.: *See—*
White, Neil S.; Wenschhof, David E.; and Mosman, Richard R., 3,694,083.

Wenzig, Wolfgang, to Siemens Aktiengesellschaft. Semiconductor diode with protective ring. 3,694,705, Cl. 317-235.00r.

Werner, Ervin R., Jr., to Du Pont de Nemours, E. I., and Company. Coating compositions containing fluorocarbon polymer and lithium polysilicate. 3,694,392, Cl. 260-29.60f.

West Creek Co., Inc.: *See—*
Ehrlichmann, Merlin W., 3,693,610.

West, Denny M., to Thiokol Chemical Corporation. Closure for open-mouth vessels. 3,693,831, Cl. 220-24.500.

Western Geophysical Company of America: *See—*
Savit, Carl H., 3,693,400.

Westinghouse Air Brake Company: *See—*
Coiner, Ronald W., 3,694,650.
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King, Dean D., 3,693,431.
Popp, William R., 3,694,702.

Westinghouse Electric Corporation: *See—*
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Cozzarin, Virgil J.; Kappermann, Francis C.; and Kipple, Harry P., 3,693,842.
Kuhn, Edmund W., 3,694,592.
Musa, Raiq S., 3,693,892.
Panson, Armand J.; and Ruka, Roswell J., 3,694,371.
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Eibl, Hansjorg E.; and Westphal, Otto, 3,694,473.

Westwood, David: *See—*
Fawcett, Richard; Smith, Arthur William; and Westwood, David, 3,694,169.

Wettlen, Roland; Melle, Hans-George; and Palsson, Jan, to Tetra Pak International AB. Arrangement for cleaning of dosing systems for fluid materials. 3,693,640, Cl. 134-169.00r.

Weyerhaeuser Company: *See—*
Arnold, Eugene W.; and Hasenwinkle, Earl D., 3,693,721.

Wheelock, Lee V. Single lever valve. 3,693,660, Cl. 137-625.400.

Whirlpool Corporation: *See—*
Blatchford, John K.; Peterson, Edward C.; and Burda, Jan C., 3,694,627.

White, Bradford C., to Gulf Research & Development Cpany. Catalytiprocess including continuous catalyst infection without catalyst removal$10 005. 3,694,351, Cl. .

White, Eugene B., to Ken-Flo Products Corporation. Aquarium filter device. 3,693,798, Cl. 210-169.000.

White, James C., to Propper Manufacturing Co., Inc. Slide conveyor system and method. 3,693,811, Cl. 214-8.50g.

White, Neil S.; Wenschhof, David E.; and Mosman, Richard R., to Eastman Kodak Company. Method and apparatus for exposing a portion of a photographic strip. 3,694,083, Cl. 355-133.000.

White, Winston Wayne, to Motorola, Inc. RF directional power monitor. 3,694,747, Cl. 324-95.000.

Whitmore, Robert A.: *See—*
Jones, Howard W.; and Whitmore, Robert A., 3,694,234.

Whittington, Keith Richard, to T. I. (Group Services) Limited. Scanning ultrasonic inspection method and apparatus. 3,693,415, Cl. 73-67.900.

Wickham, John L.; and De Witt, Erik J., to Black and Decker Manufacturing Company, The. Carriage stop for radial arm saw. 3,693,773, Cl. 192-142.00r.

Wieckmann, Gerhard. Reciprocating-rotary motion conversion device. 3,693,464, Cl. 74-52.000.

Wildhaber, Ernest. Rotary cutter for cutting teeth. 3,693,225, Cl. 29-103.00r.

Wilens, Seymour; and Trunk, Edmund G., to Stover ompany, The. Heat dissipator for encased semiconductor device having heat tab extending therefrom. 3,694,703, Cl. 317-234.00r.

Wilkerson, Herman W. Fuel burner crossover arrangement. 3,694,133, Cl. 431-191.000.

Wilkins, Howard, to General Foods Corporation. Slidable locking closure. 3,693,864, Cl. 229-17.00g.

Willeke, William Henry. Discharge means for particulate matter dispense. 3,693,844, Cl. 222-213.000.

Willems, Donald J.; and Markey, Everett F., to Armour and Company. Animal shackling device. 3,693,216, Cl. 17-24.000.

Willett, Norman F.; Stout, Perry R.; and Brownell, James R. Integrating water meter. 3,693,443, Cl. 73-229.000.

Willette, Raymond W. Tire shredder. 3,693,894, Cl. 241-279.000.

William, Edward S.: *See—*
Griffith, John Q., III; William, Edward S.; and Reiland, William H., Jr., 3,694,363.

Williams, Dennis C.: *See—*
Russakoff, Robert S.; De Luca, Carlo Bruno; Schenker, Henry; Henchcliffe, Alfred L.; and Williams, Dennis C., 3,694,694.

Williams, Harry Albert. Cushion protector. 3,693,619, Cl. 128-149.000.

Williams, Kenneth A.; and Stern, David R.; deceased (by Stern, Audrey E.; executrix), to Occidental Petroleum Corporation. Liquid-liquid extraction process for the purification of phosphoric acid. 3,694,153, Cl. 23-165.000.

Williams, Robert C., III, to Cutler-Hammer, Inc. Planetary detent for rotary devices. 3,693,475, Cl. 74-527.000.

Willis, Robin Burke, to Porta-Test Manufacturing Ltd. Hub assembly for in-line centrifugal separator. 3,693,329, Cl. 55-457.000.

Willis, William D.: *See—*
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Willner, Robert. Ring with detachable ornament having uncovered inner face. 3,693,376, Cl. 63-15.600.

Wills, Brian Charles: *See—*
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Wilson, Eleanor A. Article transporting device. 3,693,994, Cl. 280-36.00r.

Wilson, Richard D.: *See—*
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Wimpffen, George I.: *See—*
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Windmoller & Holscher: *See—*
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Winkelmann, Herbert E.; and Bodem, Roy C., to General Motors Corporation. Windshield wiper unit. 3,693,209, Cl. 15-250.210.

Winslow, Alfred Edwards. Epoxidized polyamide resin forming stable aqueous solutions of high concentration. 3,694,390, Cl. 260-29.10r.

Winter, Hans Joachim, to Goodyear Tire & Rubber Company, The. Pneumatic tire. 3,693,689, Cl. 152-361.000.

Winterthur, Hans Fickler. Double deck-bed arrangement. 3,693,199, Cl. 5-8.000.

Wisdom, Gerald F.: *See—*
Fisher, James E.; Mitchell, Jack L.; and Wisdom, Gerald F., 3,693,918.

Wise, Layton A. Method of making breathing bags. 3,694,286, Cl. 156-211.000.

Wisotsky, Max J.: *See—*
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Witt, Allan E.; and Sunn, George M., to Food Automation Service Techniques, Inc. Timing circuit for a programmable timer. 3,694,669, Cl. 307-252.00f.
Witt, Enrique Roberto; and Cave, James Patrick, to Celanese Corporation. Production of phenolic esters of aromatic acids. 3,694,490, Cl. 260-475.0pn.
Wladika, Hans: *See—*
Nellen, Wilhelm; Sevenich, Theodor; and Wladika, Hans, 3,693,393.
Wofsey, David. Null law penetration control apparatus for fusion welding. 3,694,621, Cl. 219-131.00f.
Wolf, Tobin. Peek in model kit. 3,693,281, Cl. 46-228.000.
Wolfe, James D., to Goodyear Tire & Rubber Company, The. Method of producing an integral skin polyurethane foam. 3,694,530, Cl. 264-48.000.
Wolfgang, Schneidlr, to Goodrich, B. F., Company, The. Isomerization of 5-vinylbicyclo(2.2.1) heft-2-enes. 3,694,517, Cl. 260-666.0py.
Wolski, Karlheinz: *See—*
Becker, Klaus; and Wolski, Karlheinz, 3,694,020.
Woo, James T. K.: *See—*
Rubens, Louis C.; and Woo, James T. K., 3,694,416.
Wood, Brian. Bowsight. 3,693,262, Cl. 33-265.000.
Wood, Harold V.: *See—*
Rollmann, Kent W.; and Wood, Harold V., 3,694,523.
Wood, Ruey E., Jr., to TRW Inc. Rack and pinion steering assembly. 3,693,999, Cl. 280-95.000.
Wood, Stanley J., to Technitrend, Inc. Query and response system with audio message synthesizing. 3,694,811, Cl. 340-152.00r.
Woodson Enterprises, Inc., The: *See—*
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Worcester Valve Company Limited, The: *See—*
Ward, Edward J.; and Way, Rodney, 3,693,501.
Woroble, Joseph. AC line voltage drop indicator plug. 3,694,749, Cl. 324-119.000.
Wrapping Machinery Company, Inc.: *See—*
Young, John T.; Michels, Charles E.; Zimmerman, Thomas C.; and Hagemann, Gilbert M., 3,693,737.
Wray, Paul E.; and Howard, Stephen A. Cohesion test device. 3,693,420, Cl. 73-94.000.
Wright, Arthur J.: *See—*
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Wright, Charles D.: *See—*
Fleming, Frederick A.; Koshar, Robert J.; and Wright, Charles D., 3,694,404.
Wright, John Thomas Matthew: *See—*
Roaf, Robert; and Wright, John Thomas Matthew, 3,693,616.
Wuenschel, Paul C., to Gulf Research & Development Company. Reproducible shot hole. 3,693,717, Cl. 166-285.000.
Wyman, John S., Jr.: *See—*
Robrecht, Charles J.; and Wyman, John S., Jr., 3,693,410.
Xerox Corporation: *See—*
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Yamada, Takeo; and Ono, Shigeo, to Nippon Kogaku K.K. Memory circuit of an electric shutter. 3,693,518, Cl. 95-10.0ct.
Yamagisawa, Yoshinari: *See—*
Kimoto, Koji; and Yamagisawa, Yoshinari, 3,694,535.
Yamagishi, Kazuo, to Tokyo Gas Company Limited. Method and apparatus for measuring the carbon potential in gas atmospheres. 3,693,409, Cl. 73-25.000.
Yamaguchi, Goro; Komatsu, Susumu; Yoshizaki, Kazuhiro; and Fukumoto, Tetsuo. Catalyst for catalytic cracking or steam reforming of hydrocarbons and process for producing the catalyst. 3,694,379, Cl. 252-455.00z.
Yamaji, Keizo; and Kurahashi, Akira, to Canon Kabushiki Kaisha. Copying apparatus. 3,694,069, Cl. 355-4.000.
Yamamoto, Akira. Automotive suspension mechanism. 3,693,746, Cl. 180-73.0tl.
Yamamoto, Takashi: *See—*
Ikeda, Yoneichi; Takeda, Tsukasa; Hattori, Michio; Kiyomiya, Yutaka; and Yamamoto, Takashi, 3,694,322.
Yamamura, Isao: *See—*
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Yamasaki, Hiroo; Kurita, Yoshio; Ishikawa, Yutaka; and Sawayama, Takehiro, to Yokogawa Electric Works, Ltd. Karman's vortices generating device. 3,693,438, Cl. 73-194.00b.
Yamazaki, Hiroshi: *See—*
Ando, Tetsuo; and Yamazaki, Hiroshi, 3,694,704.
Yamazaki, Shinichiro, to Aisin Seiki Kabushiki Kaisha. Load lifting mechanism. 3,693,937, Cl. 254-126.000.
Yang, Jen T.; Walter, Robert; and Mallory, Charles W., to Hittman Associates, Inc. Extended aeration waste water treatment. 3,694,353, Cl. 210-7.000.
Yano, Motohiro: *See—*
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Yates, Donald B., to Pullman Incorporated. Anchoring rod bracket assembly for railway car brake rigging. 3,693,762, Cl. 188-52.000.
Yates, Robert L. Ornamental device. 3,694,648, Cl. 240-107.000.
Yazawa, Masahide, to Polymer Processing Research Institute, Ltd. Method for fibrillating stretched film. 3,693,851, Cl. 225-3.000.
Yokogawa Electric Works, Ltd.: *See—*
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Yonezawa, Toshio: *See—*
Nakamura, Masakatsu; Yonezawa, Toshio; Kato, Taketoshi; Watanabe, Masaharu; and Akatsuka, Minoru, 3,694,707.
York Feather & Down Corporation: *See—*
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Yoshida, Takaomi: *See—*
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Yoshizaki, Kazuhiro: *See—*
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Yoskowitz, Jacob. Combination tool. 3,693,388, Cl. 72-70.000.
Young, Claude S.: *See—*
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Young, Clinton J. T.: *See—*
Danko, Joseph O., Jr.; and Young, Clinton J. T., 3,694,072.
Young, Donald S.; and Fricke, William C., to Sanders Associates, Inc. Laser having means for enhancing the tem mode output thereof. 3,694,768, Cl. 331-94.500.
Young, Harold K.: *See—*
Wald, Herbert; Young, Harold K.; and Blanch, William O., 3,693,955.
Young, John T.; Michels, Charles E.; Zimmerman, Thomas C.; and Hagemann, Gilbert M., to Wrapping Machinery Company, Inc. Reversible manual and automatic labeling machine with weigher. 3,693,737, Cl. 177-52.000.
Young, Robert W.: *See—*
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Young, Stephen A.: *See—*
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Youngquist, John A.: *See—*
Bergum, Bernard C.; Bilhorn, John M.; Kenyon, Kenneth H.; Macaulay, William R.; and Youngquist, John A., 3,694,266.
Yuhas, Edward R., to Fluid Chemical Company, Inc. Striped product aerosol dispenser. 3,693,837, Cl. 222-94.000.
Zalyalien, Mansur Abdullovich; Asfandiyarov, Khalim Akhmetovich; Gubarev, Yakov Fedorovich; and Arzamastsev, Filipp Grigorievich. Valve mechanism. 3,693,934, Cl. 251-149.500.
Zangl, Karl: *See—*
Jager, Georg; Wenger, Helmut; and Zangl, Karl, 3,693,253.
Zaweski, Edward F., to Ethyl Corporation. Lubricating oil. 3,694,357, Cl. 252-48.200.
Zdanuk, Edward J.: *See—*
Krock, Richard H.; Shen, Yuan Shou; and Zdanuk, Edward J., 3,694,198.
Zdanuk, Edward J.; Krock, Richard H.; and Shen, Yuan Shou, to Mallory, P. R., & Co., Inc. Electrical contact materials of silver-cadmium oxide containing additives. 3,694,197, Cl. 75-173.00r.
Zeiss-Stiftung, Carl, d/b/a Zeiss, Carl: *See—*
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Zellweger Ltd.: *See—*
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Zenith Radio Corporation: *See—*
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Ziffer, Jack, to Pabst Brewing Company. Process for producing sodium gluconate. 3,694,501, Cl. 260-527.00r.
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Zoecon Corporation: *See—*
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Zongl GmbH: *See—*
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Zoo-Lab, Inc.: *See—*
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Zorayan, Vahan: *See—*
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Zwecker, Karl: *See—*
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Zygiel, Alfred E. Monolithic cast body heat exchanger. 3,693,711, Cl. 165-164.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF SEPTEMBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Anderson, John R., and G. S. Somekh, by Union Carbide Corp. Separation of aromatic hydrocarbons from nonaromatic hydrocarbons. Re. 27,494, 9–26–72, Cl. 260—674.

Baldwin, Herman J., and G. W. Sederberg, to Cincinnati Milacron Inc. Rockable closure device for material cutting machine. Re. 27,495, 9–26–72, Cl. 83—145.

Bee, Mark W.: *See*—
McGilvray, Bruce L., Lang, Boehner, and Bee. Re. 27,485.

Boehner, William E.: *See*—
McGilvray, Bruce L., Lang, Boehner, and Bee. Re. 27,485.

Brenner, William C., to Westinghouse Electric Corp. Transposed conductor for dynamoelectric machines, Re. 27,489, 9–26–72, Cl. 310—213.

Cincinnati Milacron Inc.: *See*—
Baldwin, Herman J., and Sederberg. Re. 27,495.

Dyke, Herbert G. Expansible carrying case with web having two stable states. Re. 27,486, 9–26–72, Cl. 190—44.

Eaton Yale & Towne Inc.: *See*—
Lauck, Robert B. Re. 27,488.

Greig, Harold G., to RCA Corp. Electrostatic printing. Re. 27,490, 9–26–72, Cl. 117—37.

Hassler, Otto, to Willco-Horgerate Medizinische Apparatebau G.m.b.H. Directional hearing aid. Re. 27,487, 9–26–72, Cl. 179—107.

International Business Machines Corp.: *See*—
McGilvray, Bruce L., Lang, Boehner, and Bee. Re. 27,485.

Lang, Donald J.: *See*—
McGilvray, Bruce L. Lang, Boehner, and Bee. Re. 27,485.

Lauck, Robert R., to Eaton Yale & Towne Inc. Hydrostatic transmission control system. Re. 27,488, 9–26–72, Cl. 60—19.

Laut, William. Method and apparatus for centrifugal separation. Re. 27,493, 9–26–72, Cl. 210—78.

Macovski, Albert, to Stanford Research Institute. Photography using spatial filtering. Re. 27,491, 9–26–72, Cl. 95—12.2.

McGilvray, Bruce L., D. J. Lang, W. E. Boehner, and M. W. Bee, by International Business Machines Corp. Data processing system execution retry control. Re. 27,485, 9–26–72, Cl. 340—172.5.

Owens-Illinois Inc.: *See*—
Santelli, Thomas R. Re. 27,484.

RCA Corp.: *See*—
Greig, Harold G. Re. 27,490.

Radio Corp. of America: *See*—
Wheatley, Carl F., Jr. Re. 27,492

Santelli, Thomas R., to Owens-Illinois, Inc. Method of forming partly foamed plastic articles. Re. 27,484, 9–26–72, Cl. 264—45.

Sederberg, George W.: *See*—
Baldwin, Herman J., and Sederberg. Re. 27,495.

Somekh, George S.: *See*—
Anderson, John R., and Somekh. Re. 27,494.

Stanford Research Institute: *See*—
Macovski, Albert. Re. 27,491.

Union Carbide Corp.: *See*—
Anderson, John R. and Somekh. Re. 27,494.

Wheatley, Carl F. Jr., to Radio Corp. of America. Television deflection system including AFC circuit with regenerative phase detector. Re. 27,492, 9–26–72, Cl. 178—69.5.

Westinghouse Electric Corp.: *See*—
Brenner, William C. Re. 27,489.

Willco-Horgerate Medizinische Apparatebau G.m.b.H.: *See*—
Hassler, Otto. Re. 27,487.

LIST OF DESIGN PATENTEES

Amberg, Ralph G., to Owens-Illinois, Inc. Plastic jar. 224,829, 9–26–72, Cl. D9—154.

Andorra Nurseries, Inc.: *See*—
Kravitz, Harry. 224,827.

Bigoney, William F., Jr., to Buning the Florist, Inc. Building. 224,831, 9–16–72, Cl. D13—1.

Buhk, Randall P., to Steelcase Inc. Chair. 224,824, 9–26–72, Cl. D6—75.

Buning the Florist, Inc.: *See*—
Bigoney, William F. 224,831.

CTP Industries Inc.: *See*—
Kamins, Seymour, and Rosenberg. 224,826.

Cannon Mills Co.: *See*—
Rock, John W. 224,851.

Conner, James M., to Polaroid Corp. Portable carrying case for photographic I.D. equipment. 224,849, 9–26–72, Cl. D87—1.

Creative Creations, Inc.: *See*—
Feuer, Perry. 224,846.

Crowder, Wyly K. Rear vision visor for a helmet. 224,821, 9–26–72, Cl. D2—233.

Curtis-Young Corp.: *See*—
Young, Arthur W. 224,843.

Dawson, Calvert A. Stringed musical instrument. 224,841, 9–26–72, Cl. D56—1.

Dorion, Francis W., Jr., to The Gillette Co. Dual blade unit for a safety razor. 224,852, 9–26–72, Cl. D95—3.

Douglas, David. Utensil hanger or similar article. 224,838, 9–26–72, Cl. D44—29.

Enzel, Fred W., and E. P. Hillary, to Kellwood Co. Combined tent and fly cover therefor. 224,850, 9–26–72, Cl. D88—3.

Feuer, Perry, to Creative Creations, Inc. Pencil. 224,846, 9–26–72, Cl. D74—24.

Flider, Frank S., to The Justrite Manufacturing Co. Carbide lamp. 224,839, 9–26–72, Cl. D48—24.

Furno, Harold R. Step stool. 224,832, 9–26–72. Cl. D15—8.

Gillette Co. The: *See*—
Dorion, Francis W., Jr. 224,852.

Glovemakers, Inc.: *See*—
Meyer, Rudi P. 224,853.

Gretag Aktiengesellschaft: *See*—
Muchenberger, Ernest. 224,844.

Hillary, Edmund P.: *See*—
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Jenkins, Dennis L. Table. 224,825, 9–26–72, Cl. D6—146.

Justrite Mfg. Co., The: *See*—
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Kellwood Co.: *See*—
Enzel, Fred W., and Hillary. 224,850.

Kravitz, Harry, to Andorra Nurseries, Inc. Bottle or similar article. 224,827, 9–26–72, Cl. D9—47.

Kretz, Edward J. Jug. 224,828, 9–26–72, Cl. D9—42.

LTV Aerospace Corp.: *See*—
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La Goy, Byron L. Game. 224,837, 9–26–72, Cl. D34—5.

Landell, Harper, to Speakman Co. Hand shower body. 224,834, 9–26–72, Cl. D23—35.

Lee, Janice L. Writing paper or the like. 224,842, 9–26–72, Cl. D59—14.

Lee, William, Jr. Frame for a baby crib. 224,822, 9–26–72, Cl. D5—5.

Lim, Enghua, to Monsanto Co. Monolithic light emitting semiconductor display. 224,835, 9–26–72, Cl. D26—5.

Matza, Edward C., to LTV Aerospace Corp. Stationary traffic. 224,845, 9–26–72, Cl. D72—1.

McKay, Nicholas D. Cartridge comb. 224,848, 9–26–72, Cl. D86—8.

Meyer, Rudi P. to Glovemakers, Inc. Wind chimes, or similar article. 224,853, 9–26–72, Cl. D72—1.

Monsanto Co.: *See*—
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Muchenberger, Ernest, to Gretag Aktiengesellschaft. Photographic printer. 224,844, 9–26–72, Cl. D61—1.

Old World Arts, Inc.: *See*—
Stilwell, Melvyn Dale. 224,830.

Owens-Illinois, Inc.: *See*—
Amberg, Ralph G. 224,829.

Paddock, Wilbur C.: *See*—
Talman, John T., and Paddock. 224,840.

Polaroid Corp.: *See*—
Conner, James M. 224,849.

Roberts John F.: *See*—
Roberts, John F. 224,823.

Roberts, John F. to John F. Roberts. Decorative display rack. 224,823, 9–26–72, Cl. D6—20.

Rock, John W., to Cannon Mills Co. Sheet or similar article of bed linen. 224,851, 9–26–72, Cl. D92—26.

Rosenberg, Norman.: *See*—
Kamins, Seymour, and Rosenberg. 224,826.

Speakman Co.: *See*—
Landell, Harper. 224,834.

Steelcase Inc.: *See*—
Buhk, Randall P. 224,824.

Stilwell, Melvyn D., to Old World Arts, Inc. Door. 224,830, 9–26–72, Cl. D13—1.

TSI, Inc.: *See*—
Talman, John T., and Paddock. 224,840.

Talman, John T., and W. C. Paddock, to TSI, Inc. Plastic film dispenser. 224,840, 9–26–72, Cl. D52—2.

Thomas, Annie R. Palm held air styling tool. 224,847, 9–26–72, Cl. D86—8.

Voros, Joseph F. Fishing lure body. 224,833, 9–26–72, Cl. D22—28.

Waldron, Gary B. Toy vehicle figure. 224,836, 9–26–72, Cl. 34—15.

Watel, James L.: *See*—
Wittcoff, Harvey B., and Watel. 224,820.

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ISSUED SEPTEMBER26, 1972

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

47 3,693,189
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203 3,693,197
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68 3,693,200

CLASS 8

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10.2 3,694,138
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151 3,694,142
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CLASS 9

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492 3,693,244
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CLASS 33

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16.1 3,693,333
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CLASS 110

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69 3,693,616
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132D 3,693,618
149 3,693,619
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290R 3,693,622
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40R 3,693,759

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142R 3,693,773

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4 3,693,852
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91 3,693,857
108 3,693,858
118 3,693,859
119 3,693,860
177 3,693,861

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127 3,693,863

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	3,693,531		3,694,220		3,694,539		3,694,670		3,694,370		3,694,266
	3,693,537		3,694,341	51 :	3,693,427		3,694,715	54 :	3,693,326		3,694,268
	3,693,711		3,694,342		3,693,530	52 :	3,694,742	55 :	3,693,252		3,694,300
	3,693,714		3,694,490		3,693,690	53 :	3,693,312		3,693,319		3,694,399
	3,693,71[illegible]		3,694,654		3,693,722		3,693,333		3,693,474		3,694,410
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	3,693,736		3,694,753		3,693,979		3,693,587		3,693,696		3,694,501
	3,693,801		3,694,754		3,694,123		3,693,721		3,693,792		3,694,662
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DESIGN PATENTS

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	224,831	20 :	224,833		224,848	36 :	224,826	42 :	224,823	55 :	224,838
13 :	224,822	22 :	224,841	29 :	224,820						

U.S. GOVERNMENT PRINTING OFFICE: 0—1972

U. S. DEPARTMENT OF COMMERCE

Peter G. Peterson, *Secretary*

PATENT OFFICE

Robert Gottschalk, *Commissioner*